Working Days and Working Hours in an Expanding Economy

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Abstract

This paper studies extended work schedules in China by decomposing working time into two intensive margins: working days per week and working hours per day. Using panel data from the China Household Finance Survey for 2011 to 2019, we examine whether the two margins behave as substitutes or complements, and whether extended schedules are more consistent with worker-side constraints or employer-side scheduling requirements. The empirical analysis indicates that extended workdays and weekend work are both widespread and often coexist, with little evidence of an hours–days trade-off. The two margins show a moderate complementarity. A two-sector equilibrium framework further suggests that the co-movement of extended workdays and weekend work is better aligned with employer-side scheduling needs.

Keywords: Working days, Working hours, Extensive working schedules.

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I. Introduction

In labor markets, working time that exceeds the standard working schedule—such as weekends or late evenings—is typically considered undesirable due to its additional costs (Hamermesh, 1996; Nie et al., 2015). This concern is especially relevant in China, an expanding economy where a large share of employees work beyond standard weekday norms, with extended effort concentrated in long workdays, long workweeks, or both (Zheng et al., 2023; Dong et al., 2023; Nie et al., 2015). China's average weekly working hours routinely exceed 46 hours, placing it among the countries with the longest workweeks globally (Yang et al., 2023; Spector et al., 2017). Although China stands out as a particularly pronounced case, similar patterns are also observed in other countries. Evidence from the United States and Canada shows that weekend and night work remain widespread and persistent even where average weekly hours are lower (Hamermesh and Stancanelli, 2015; Biddle and Hamermesh, 2026; Zeytinoglu and Cooke, 2006). [1] China therefore provides a particularly informative setting for studying extended work schedules.[2]

The literature offers two views on labor input. A first view is that a substantial number of papers have focused on the number of hours in studies of part-time work (Mäkinen et al., 2023; Wielers et al., 2014; Bosch et al., 2010) and wage-hours packages (Blundell and MaCurdy, 1999; Blundell et al., 2011; Biddle and Zarkin, 1989; Anxo and Karlsson, 2019). Within this view, the main questions concern overall labor input: whether individuals are employed, in part-time or full-time jobs, or supplying overtime relative to a standard schedule, often with hours embedded in wage-hours packages. This overall working hours perspective is indispensable for understanding labor supply, labor demand, and aggregate labor input.

A second view on labor input is that a limited number of studies have examined labor supply in terms of the number of working days (du Bois et al., 2025; Campbell, 2024; Bolino et al., 2021; Hamermesh and Stancanelli, 2015; Gutiérrez-i Puigarnau and Van Ommeren, 2010; Zeytinoglu and Cooke, 2006; Hamermesh, 1996; Ronen and Primps, 1981). In particular, studies examined the four-day workweek. Some studies have investigated the consequences of compressed schedules and asked whether they are driven more by worker-side preferences, such as commuting costs, work-life balance, and family coordination, or by employer-side implementation and organizational constraints, such as workplace opening and coverage requirements. However, this evidence mainly concerns reductions

[1] Throughout, unless otherwise stated, working days refer to days worked per week and working hours refer to hours worked per day. The CHFS records hours worked, but not the clock time at which work occurs. We therefore define *weekend work* as working more than five days per week and use *night work* as a shorthand for the long-daily-hours margin, defined as working more than eight hours per day. Hence, references to night work should be interpreted as a proxy for long daily hours rather than direct evidence on evening or night timing.

[2] By *margins*, we mean different dimensions along which total work can adjust. In this paper, the two margins are the number of working days per week and the number of working hours per day.

in the number of working days, particularly in OECD settings where four-day or compressed schedules have become part of recent policy debates (du Bois et al., 2025; Campbell, 2024; Ronen and Primps, 1981). In contrast, much less is known about the opposite case: extensive workweeks, where workers move beyond the standard five-day schedule (Bolino et al., 2021; Hamermesh and Stancanelli, 2015; Zeytinoglu and Cooke, 2006).[3] Data on extensive workweeks are limited because of less weekend work in general across some countries, less emphasis on the day margin, or firms' reluctance to report weekend work due to regulations, resulting in fewer empirical results.

The central research question of this paper is whether the extended work schedules observed in China reflect complementarity or substitution between the labor input in terms of working days and working hours. An additional question is whether the relationship between these two margins is driven mainly by firms' demand for labor time or by workers' supply-side incentives and constraints. This distinction matters because both possibilities imply a different mechanism behind extended work schedules. If the two margins of hours and days are complements, on the demand side, firms may expand both margins if they need broader service coverage or longer production time, for example, in customer-facing activities, logistics, health care, or periods of peak production. On the supply side, workers may increase both margins if earnings pressure, low hourly pay, or weak bargaining power leads them to supply more labor across both days and hours.

If the number of working hours and days are substitutes, on the demand side, firms may prefer adding workdays rather than lengthening daily hours when fatigue or declining marginal productivity make very long workdays less efficient (Pencavel, 2015). On the supply side, workers may prefer to concentrate work into fewer days with longer daily hours to reduce fixed costs, such as commuting, or to preserve weekends and time with their families (Gutiérrez-i Puigarnau and Van Ommeren, 2010; Hallberg, 2003; Craig and Brown, 2014). Therefore, two specific questions need to be addressed to understand the internal structure of extended work schedules. First, are working days and working hours substitutes or complements? Second, is the dominant mechanism driven by the supply side or the demand side?

For our first sub-question, our empirical findings do not provide support for working hours and days as substitutes. Instead, we get various indications that hours and working days are complements. First, the joint distribution shows that weekend work and long daily hours are both widespread and often coexist: workers with longer daily hours are not systematically concentrated in fewer-day schedules. Second, fixed-effect two-stage least squares (hereafter, FE-2SLS) estimates provide further evidence of a positive effect of working hours on working days: one additional working hour would lead to 0.18 additional working days, with statistical significance at the 10% level. With respect to our second sub-

[3]There is a few studies about 996 work system, but not in the perspective of working days or working hours (Liu, 2023; Wang, 2020; Xiao et al., 2020).

question, fixed-effect estimates for industries and firm types show significant impacts on both working hours and working days, whereas age does not, suggesting a demand-driven impact on both margins. Further evidence is provided by the two-sector framework based on Hamermesh and Biddle (2025), which points more strongly to demand-side scheduling requirements than to worker-side willingness for both weekend work and night work. In general, the empirical evidence suggests that firms' willingness to expand service coverage or to lengthen production time is the potential mechanism driving complementarity between margins.

The findings contribute to three strands of the working-time literature. First, they qualify the hours-based labor-supply and wage-hours package literature by showing that total working hours cannot be fully understood from weekly hours alone. While studies of part-time work, overtime, and wage-hours packages typically focus on the amount of labor supplied, our evidence shows that the same labor input can be organized through different combinations of working days and working hours, and that the working-day margin is not merely a residual adjustment to working hours (Blundell and MaCurdy, 1999; Blundell et al., 2011; Biddle and Zarkin, 1989; Anxo and Karlsson, 2019). Second, the paper extends the literature on working days, compressed schedules, and nonstandard work timing by studying the opposite case from the four-day workweek: extensive working schedules in which employees move beyond the standard five-day schedule. The evidence from China shows that weekend work and night work often coexist rather than offset each other, suggesting that working days can amplify rather than substitute for more working hours (Hamermesh and Stancanelli, 2015; Zeytinoglu and Cooke, 2006; Biddle and Hamermesh, 2026; du Bois et al., 2025). Third, the paper contributes to the literature on the supply- and demand-side determinants of working schedules. The fixed-effects evidence and the two-sector framework indicate that the co-movement of the two margins is more consistent with employer-side scheduling requirements than with a worker-side supply response, thereby connecting the study of extensive working schedules to sectoral operating needs, firm organization, and the allocation of labor time across the week (Pencavel, 2015; Gutiérrez-i Puigarnau and Van Ommeren, 2010; Hallberg, 2003; Craig and Brown, 2014).

The remainder of the paper is organized as follows. Section 2 reviews the related literature and develops the hypotheses. Section 3 describes the CHFS data and the measurement of working days and working hours. Section 4 presents descriptive evidence on their joint distribution, with particular attention to weekend work and long daily hours. Section 5 uses FE-2SLS and fixed-effects panel regressions to examine whether the two margins behave as substitutes or complements. Section 6 uses the two-sector framework to assess whether the observed relationship is more consistent with employer-side scheduling requirements or worker-side supply forces. Section 7 concludes.

II. Potential Hypotheses

Our starting point is that working days and hours are different phenomena. Consequently, observed work schedules – in terms of days and hours – are equilibrium outcomes that can be shaped by employer demand for temporal coverage, worker preferences over income and leisure, bargaining power, and household coordination constraints (Gerstel and Clawson, 2018; Hamermesh, 1996). There are two questions. First, are working days and working hours organized as alternative margins or as jointly expanding margins? Second, conditional on the observed pattern, is the dominant force more plausibly located on the supply side or the demand side of the labor market?

Complementarity on the firm side arises when employers need to expand labor time on both margins simultaneously. When production or service provision requires broader temporal coverage, adding working days and lengthening daily shifts can become complements rather than alternatives. This is likely in customer-facing, continuously operating, or time-sensitive activities—such as retail, hospitality, logistics, health care, and rush-order manufacturing—where firms need labor for more days of the week and for longer periods within each day. The defining feature is therefore not the reallocation of a fixed weekly total, but an expansion in temporal coverage and nonstandard work timing (Hamermesh and Stancanelli, 2015; Zeytinoglu and Cooke, 2006).

Complementarity on the worker side arises when the same supply-side pressure pushes both margins upward. Workers facing low hourly pay, pressing household income needs, limited outside options, or weak bargaining power may seek or accept both longer daily hours and more working days in order to raise total earnings or retain employment. This mechanism does not require workers to intrinsically prefer long days and long weeks. It is enough that earnings pressure, hours constraints, weak schedule control, or limited job alternatives make increases on both margins more likely. In this case, working days and working hours move together because both margins respond to the same worker-side constraints or incentives (Anxo and Karlsson, 2019; Gerstel and Clawson, 2018; Altonji and Paxson, 1988).

Substitution on the firm side arises when employers mainly require a given weekly amount of labor services and can choose how to allocate that total across days and hours. A firm may substitute more working days with shorter shifts for fewer working days with longer shifts. The chosen mix depends on relative costs. Declining marginal productivity, fatigue, and overtime premiums make very long workdays less attractive and may favor adding days; by contrast, fixed opening costs, supervision costs, or coordination costs may favor concentrating work into fewer but longer days. The key feature is that working days and daily hours are alternative instruments for organizing a given weekly labor requirement (Pencavel, 2015; Hart and Ma, 2010; Hamermesh, 1996).

Substitution on the worker side arises when workers target a desired level of weekly earnings or leisure and choose between more working days and longer daily hours to reach it. This logic is consistent with labor-supply models that separate week, day, and hour decisions. Some workers may prefer to bunch hours into fewer days to reduce commuting costs, preserve weekends, or coordinate leisure with partners and children. Others may prefer more working days with shorter daily shifts when long workdays are especially costly because of fatigue, childcare, or health constraints. In either case, workers treat working days and daily hours as alternative ways of composing a weekly schedule (Castex and Dechter, 2018; Craig and Brown, 2014; Gutiérrez-i Puigarnau and Van Ommeren, 2010; Hallberg, 2003; Biddle and Zarkin, 1989; Blank, 1988).

It leads to the following four hypotheses.

Hypothesis 1a. *Working days and working hours are substitutes.*

Hypothesis 1a implies a negative relationship between the two margins. Holding other factors constant, workers with longer daily hours should tend to work fewer days, and workers with longer workweeks should be less likely to report very long workdays.

Hypothesis 1b. *Working days and working hours are complements.*

Hypothesis 1b implies a positive relationship between the two margins. Workers with longer daily hours should also tend to work more days, and weekend work should be more likely to coincide with night work.

Hypothesis 2a. *Extended working schedules are primarily driven by worker-side incentives and constraints.*

Hypothesis 2a implies that weekend work and night work should be correlated with certain workers' characteristics, like weaker bargaining power, limited outside options, or larger household coordination constraints. In this interpretation, intensive schedules primarily reflect workers' willingness or need to provide nonstandard labor time.

Hypothesis 2b. *Extended working schedules are primarily driven by firm-side scheduling requirements.*

Hypothesis 2b implies that weekend work and night work should be concentrated in firm types and industries with stronger operational needs for nonstandard labor time. In this interpretation, intensive schedules mainly reflect employer demand for extended temporal coverage.

III. Data and Measures

We use individual-level data from the China Household Financial Survey (CHFS), a nationally representative biennial survey conducted by Southwestern University of Finance and Economics (Gan et al., 2014). The CHFS covers most Chinese provinces (about 85% of the population) and gathers information from each adult respondent. The interviewer identifies the household member deemed most knowledgeable about the household as a whole and administers the interview to that respondent, with assistance from other members when necessary. If the selected respondent is unavailable, the interview is rescheduled.

Starting in 2011 as the baseline, CHFS has conducted six waves of inquiry, including 2013, 2015, 2017, 2019, and 2021 so far. To avoid bias from COVID, we only consider the first five waves till 2019. However, since 2015, CHFS changed its measure of working days from per week to per month; we merged the working days data from 2015 to create a synchronized measure. Specifically, individuals are asked about their average working days per week for the past month for 2011 and 2013, whereas they are asked to report the average of working days per month for the past year. This switch aims to avoid bias toward seasonal jobs, such as teachers taking summer breaks, but also hinders us from learning about working more than 5 days in a row. Therefore, we conducted a projection to keep consistency across waves as follows: We project working days per month

Table 1: Projection from working months to working weeks

Working days per month 2015,2017,2019	**Working days per week 2011, 2013**
(0,4.3]	1
(4.3,8.5]	2
(8.5,13]	3
(13,17]	4
(17,22]	5
(22,26]	6
(26,30]	7

Source: China Household Financial Survey (CHFS).
Period: 2015-2019, every two years, with a total number of 99,605 observations having been transacted.
Note: Projection is based on transaction parameter 4.3 weeks/month, with a slight change to the criteria, which now includes five days and 22 days per month.

to working days per week using the 4.3 conversion factor, as suggested by the World Bank. The result is shown in Table 1. We additionally classify 22 working days per month as equivalent to a standard five-day workweek, consistent with the official monthly range after public holidays. However, we exclude 23 from working 5 days per week, as if one works 23 days on average, it must exceed five working days for most of the month, and should be identified as 6 days per week, since it is an average for the whole year[4]. In the same line of reasoning, observations for working 31 days per month are dropped (902 out of 118394 observations available in total, 0.76%), as it is highly unlikely to work 31 days per month on average, even if one works every day. On the other hand, for the years 2011 and 2013, some observations reported zero working days, zero working hours, or both, primarily

[4]Appendix Table A4 reports robustness checks using an alternative conversion that treats 23 monthly working days as five weekly working days, as well as a continuous weekly-equivalent measure defined as monthly working days divided by 4.3.

due to the nature of seasonal jobs, such as teachers taking a summer break. As these observations account for only around 1.5% of the total observations in those two years, they are excluded from further analysis to avoid bias.

Because the conversion from monthly to weekly working days may affect the classification of weekend work around the five-day threshold, we assess the sensitivity of the main results to alternative measurement choices in Appendix Table A4, where we apply an alternative rule that classifies 23 monthly working days as five weekly working days, and use a continuous weekly-equivalent measure defined as monthly working days divided by 4.3. As illustrated in the following section, these alternatives exhibit similarities to our main result. Moreover, as mentioned in the introduction, the variable labeled *night work* should be interpreted throughout as an overtime-hours indicator, since the CHFS does not report the clock time of work, and is equal to one if the individual works more than eight hours per day.

Table 2: Distribution of working days and working hours by year

Working days and hours	*2011*	*2013*	*2015*	*2017*	*2019*
			Percentage distribution		
A. Working days (per week)					
0–3	5.21	5.02	1.59	2.98	3.46
4	4.13	3.83	3.25	4.69	4.82
5	39.16	42.63	44.89	36.61	35.06
6	21.03	20.95	33.46	25.55	26.26
7	30.46	27.57	16.81	30.19	30.39
Average weekly working days	5.70	5.65	5.68	5.70	5.71
B. Working hours (per day)					
$[0, 2)$	0.05	0.24	0.11	0.15	0.22
$[2, 4)$	0.32	0.67	0.74	0.80	0.87
$[4, 6)$	1.96	2.55	2.32	2.19	1.89
$[6, 8)$	8.32	10.04	7.46	7.91	7.05
$= 8$	56.92	53.91	55.73	55.49	52.52
$(8, 10]$	19.22	19.29	21.05	19.79	22.50
> 10	13.21	13.31	12.60	13.67	14.95
Average daily working hours	8.77	8.65	8.76	8.75	8.91
C. Extended schedules: weekend work and night work					
Overtime work (work at least 8 hours per day and 5 days per week)					
Percentage working	59.0	57.8	62.6	63.7	67.5
Weekend work (work more than 5 days per week)					
Percentage working	50.6	48.4	51.8	53.8	55.1
Night work (work more than 8 hours per day)					
Percentage working	32.4	32.6	33.6	33.5	37.5
N	4,027	12,650	15,069	21,041	23,177

Source: China Household Financial Survey (CHFS).
Period: 2011–2019, every two years, with a total number of 75,964 observations.

Table 2 reports the year-by-year distribution of working days and working hours. Although the 2015 wave exhibits some reallocation across the six- versus seven-day categories compared to other waves, the broader picture is remarkably stable over time rather than structurally different. In particular, unlike what has been shown by Biddle and Hamermesh (2026) for the US, the prevalence of undesirable schedules remains persistently high across all waves: the share working more than five days per week stays around one-half of the sample, the share working more than eight hours per day remains around one-third, and the share of individuals work during the weekend or night is consistently above one-half and rises further by 2019. This pattern also contrasts with Biddle and Hamermesh (2026), who document in the U.S. a long-run shift away from undesirable evening and night work toward standard daytime hours; by comparison, our Table 2 suggests that the percentage of weekend work and night work in China exhibits a much more stable pattern over 2011–2019.

Table 3: Characteristics of employees

Variable label	**Mean**	**Median**	**Standard deviation**	**Percentage**
Age	41.52	42	11.05	
Working days per week[a]	5.69	6	1.07	
Working hours per day	8.79	8	2.29	
Annual salary (RMB)	38,623.77	30,000	45,447.75	
Annual bonus (RMB)	5,507.15	0	19,950.49	
Gender:				
Male				58.6
Female				41.4
Marital status:				
Married				84.9
Single				11.4
Cohabited				0.4
Separated				0.1
Divorced				2.2
Widowed				1.0
Education[b]:				
Compulsory				40.9
Secondary				39.1
Higher				20.0
Residence area:				
Rural				19.0
Urban				81.0
Self-reported:				
Yes				48.9
No				51.1
Firm type:				
Civil servant				23.8
State-owned enterprise				15.1
Private-owned enterprise				53.5
Foreign-funded enterprise				3.0
Other				4.6

Source: China Household Financial Survey (CHFS).
Period: 2011, 2013, 2015, 2017, and 2019, with a total of 75,964 observations.
Note: Only employees are included in this table.
[a] Working days per week for 2015, 2017, and 2019 are projected from working days per month following the rules in Table 1.
[b] Education levels are clustered into three categories of the highest degree obtained for simplicity. Compulsory: primary or junior high school; Secondary: high-school equivalent; Higher: bachelor's, master's, or PhD equivalent.

Moreover, it offers extensive individual-level information. This includes details about individuals' age, salary, bonus, commute time, gender, marital status, whether they live with a partner, educational background, region, and whether the record is self-reported, as shown in Table 3.

IV. Descriptive Statistics for Working Days/Hours Distribution

After constructing consistent measures of working days and working hours, we document how working days and hours are distributed in our sample and how weekend work and night work are layered onto that distribution.

Table 4 summarizes the pooled joint distribution of working days and working hours. Several patterns stand out. Employees work on average 5.69 days per week and 8.79 hours per day, and weekend work already concerns roughly half of the workforce across waves. Regular eight-hour days remain common—54.44% of workers report exactly 8 hours per day—but the conventional 8-hours–5-days schedule accounts for only 28.45% of the sample. Another 13.63% work 8 hours over 6 days, and 10.32% work 8 hours over all 7 days. Hence, even among workers with a standard workday, a substantial share already works on weekends.

Table 4: Joint distribution of working days and working hours

	Working days					**Total**
Working hours	0–3	4	5	6	7	
Overall 75,964 observations, 5.69 days and 8.79 hours on average						
$[0, 2)$	0.10%	0.01%	0.03%	0.01%	0.03%	0.18%
$[2, 4)$	0.14%	0.06%	0.24%	0.10%	0.23%	0.77%
$[4, 6)$	0.25%	0.19%	0.71%	0.29%	0.73%	2.17%
$[6, 8)$	0.24%	0.34%	3.78%	1.81%	1.77%	7.94%
$= 8$	0.97%	1.07%	**28.45**%	13.63%	10.32%	54.44%
$(8, 10]$	0.55%	0.90%	4.85%	6.30%	8.15%	20.75%
> 10	0.62%	1.65%	2.14%	2.72%	6.63%	13.76%
Total	2.87%	4.22%	40.20%	24.86%	27.86%	100.00%

Source: China Household Financial Survey (CHFS).
Period: 2011, 2013, 2015, 2017, 2019, with employees only.
Notes: Columns denote working days; rows denote working hours. Cells report the percentage (%) of employees in each (days, hours) combination. The total percentage of workers working certain hours/days is listed in the last column/row of each panel.

Moreover, Table 4 is also informative about the relationship between working hours and working days. Under a substitution view, longer daily hours should be associated with fewer working days. The joint distribution does not support that pattern. Instead, workers with long daily hours are frequently found in six- and seven-day schedules: among those working more than 10 hours per day, the largest mass is in the seven-day column. Moreover, even the standard eight-hour workday is distributed across markedly different numbers of working days, from five to seven, indicating that the working-day margin is not merely a residual adjustment to daily hours. Descriptively, the table therefore may suggest that the two margins often move together.[5]

Table 5 adds a dynamic perspective by showing how workers change both margins over time, separately by initial working time. Apparently, standard schedules are markedly rigid, whereas nonstandard schedules seems to be much more flexible. Among workers who start from the benchmark of exactly 8 hours per day and 5 days per week, 63.70% remain unchanged on both margins. We focus at the number of working days, 75.50% stay at the same number of days, 21.30% move to more days, and only 3.19% move to fewer days. On the hours margin, 11.60% increase hours, compared with 8.62% who reduce them. This asymmetry suggests there is downward rigidity in both dimensions of a standard full-time schedule: once such a schedule is in place, reductions in either days or hours are relatively rare.

Table 5 also suggests that overtime and part-time schedules display different adjustment patterns. Among workers already in overtime schedules, only 29.30% remain unchanged on both margins, and movements are much more two-sided: 19.10% increase hours while 28.20% reduce them, and 15.20% move to more days while 31.00% move to fewer days. Part-time jobs display another pattern. Only 21.90% remain unchanged on both margins, while 49.80% increase hours and 34.00% increase days, indicating substantial upward adjustment toward more intensive schedules. Original working time, therefore, contributes directly to the its distribution: standard jobs are rigid and comparatively protected, overtime jobs are more volatile, and part-time jobs are the segment most likely to move upward toward standard or intensive schedules.[6]

These dynamic patterns speak directly to Hypotheses 1a and 1b. If working days and working hours were close substitutes, as stated in Hypothesis 1a, increases in one margin should be accompanied more systematically by reductions in the other. Standard jobs are rigid on both margins, part-time jobs often adjust upward on both margins, and overtime jobs display two-sided mobility rather than a clear hours-for-days trade-off. Descriptively, these patterns weaken the

[5]Appendix Table A1 reports the same joint distribution separately by gender and education. These subgroup decompositions show some level differences in exposure to intensive schedules, but they do not change the central pattern: long daily hours are not concentrated in fewer-day schedules.

[6]Appendix Table A2 repeats the dynamic analysis by gender as a robustness check. The gender-specific patterns are broadly consistent with the pooled results: standard schedules remain the most rigid segment, part-time schedules show the strongest upward movement, and overtime schedules display more two-sided mobility.

Table 5: Dynamics of Working Days/Hours by Year and Working time.

Hours/Days change	Days ↑	Days =	Days ↓	*Row total*	Days ↑	Days =	Days ↓	*Row total*
Overall					*Over-time: ≥ 8 hours/day and ≥ 5 days/week*			
21,716 observations					*11,733 observations*			
Hours ↑	5.23	11.60	4.89	*21.72*	3.00	10.30	5.82	*19.10*
Hours =	10.10	**38.49**	9.91	*58.50*	6.88	**29.30**	16.50	*52.70*
Hours ↓	4.65	10.11	5.02	*19.78*	5.29	14.20	8.72	*28.20*
Column total	*19.98*	*60.20*	*19.82*	*100.00*	*15.20*	*53.80*	*31.00*	*100.00*
Standard: = 8 hours/day and = 5 days/week					*Part-time: ≤ 8 hours/day and ≤ 5 days/week*			
6,544 observations					*3,439 observations*			
Hours ↑	4.89	5.46	1.28	*11.60*	13.50	27.70	8.61	*49.80*
Hours =	14.60	**63.70**	1.45	*79.80*	12.50	**21.90**	3.52	*38.00*
Hours ↓	1.79	6.37	0.46	*8.62*	7.94	3.26	1.05	*12.20*
Column total	*21.30*	*75.50*	*3.19*	*100.00*	*34.00*	*52.90*	*13.20*	*100.00*

Source: China Household Financial Survey (CHFS).
Period: 2011, 2013, 2015, 2017, 2019.
Notes: Rows classify changes in working *hours* (increase, same, decrease); columns classify changes in working *days*. Row and column totals are italicized and sum to 100 within each block (up to rounding). Numbers in bold represent the percentage of individuals with no adjustment on either margin (Hours = and Days =). Subgroups are defined by working time according to working days and working hours.

simple substitution view in Hypothesis 1a. Instead, they are more consistent with Hypothesis 1b, in which the two margins are frequently jointly determined, either because firms expand labor input along both dimensions or because workers facing earnings pressure and limited outside options accept more intensive schedules on both margins.

Taken together, the descriptive evidence gives two results. First, long daily hours and long workweeks frequently coexist: workers with longer days are not systematically concentrated in fewer-day schedules. Second, the intertemporal descriptives do not refer to a simple substitution mechanism. Workers in standard jobs rarely reduce either margin, part-time workers often move upward on both margins, and overtime workers show flexible but not clearly offsetting adjustments.

V. Association between Working Days and Hours

The analysis proceeds in two steps. First, we test Hypotheses 1a and 1b by using FE-2SLS and fixed-effect estimates. Second, we estimate fixed-effects regressions for working days and working hours separately and compare how workers' characteristics, firm type, and industry explain both margins. We focus more on providing micro-level evidence on the potential sources of co-movement, and further evidence for the dominant mechanism will be provided in Section 6.

A. Interconnections between working days and working hours

We apply an FE-2SLS specification, with working days as the dependent variable and working hours as the right-hand-side variable, which is endogenous and therefore instrumented using a 0-1 self-report indicator. The 0-1 self-report indicator (average 0.489 for reporting 'yes') has been used as an instrument for reported working hours, that is, whether the working-time information is reported by the worker or by another household member. The identifying assumption is that daily working hours are relatively difficult for other household members to report precisely, whereas working days are more discrete, routine-based, and easier to observe. One plausible channel is that proxy respondents may partly infer daily hours from departure and return times, thereby incorporating commuting or waiting time into reported work duration. This reporting channel should affect the measured daily hours more than the number of working days. The aim of this approach is to mitigate the impact of the simultaneous bias. With working days as the outcome and working hours as the explanatory variable, working more days may, in turn, also affect working hours. The estimates should therefore be interpreted as evidence based on variation in reported hours rather than as a clean local average treatment effect of true working hours.[7]

Table 6: Working hours and working days: fixed-effects and instrumented sensitivity estimates

Working hours/long daily hours		F-stat for instrument		F-stat for model	
Value	(s.e.)	Value	sign.	Value	sign.
Panel A. Fixed-effects estimates on working hours					
Dependent variable: working days per week (5.69 days on average)					
0.007	(0.005)	–	–	6.778	***
Panel B. FE-2SLS estimates on working hours					
Dependent variable: working days per week (5.69 days on average), with self-report as instrument for working hours					
0.179	(0.097).	23.357	***	172.631	***
Panel C. FE-2SLS estimates on long daily hours					
Dependent variable: weekend work (0.53 on average), with self-report as instrument for long daily hours					
0.294	(0.340)	8.927	**	227.221	***

[7]Appendix Table A3 provides extra evidence for the robustness of the instrument. Once the same fixed-effects controls are included, the self-report indicator is strongly associated with reported working hours and with night work, but it is not significantly related to working days or weekend work, supporting the use of self-report as a source of variation in the reported hours margin rather than in the days margin.

Source: China Household Finance Survey (CHFS).
Period: Employees living with a partner, 2011, 2013, 2015, 2017, and 2019.
Notes: The dependent variable is working days per week for Panels A and B, and weekend work for Panel C. Panel A reports fixed-effects estimates from a regression of working days on working hours. Panels B and C report FE-2SLS estimates using the self-report indicator as an instrument for working hours and long daily hours, respectively. These estimates are interpreted as instrumented sensitivity estimates rather than as definitive causal estimates. All specifications include individual fixed effects and controls for age, education, year, industry, firm type, region, and rural residence; coefficients on controls are omitted for brevity. All panels use 75,964 observations. Because the CHFS does not directly observe clock time, *night work* is used only as shorthand for long daily hours and is defined as working more than eight hours per day.
Clustered standard errors: Standard errors in parentheses are clustered at the individual level. The instrument F-statistic refers to the first-stage relevance of the self-report indicator. The model F-statistic refers to the second-stage specification.
Significance levels: $.p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table 6 begins with the direct fixed-effects estimates in Panel A. The coefficient on working hours is positive but very small: for the full sample, one additional hour per day is associated with only 0.007 additional working days per week.

Panel B presents the FE-2SLS estimates, instrumenting reported working hours with 0-1 self-report indicator. For the pooled sample, the first stage is reasonably strong ($F = 23.357$), and the second-stage coefficient is positive at 0.179, significant at the 10% level. This finding weakens the substitution view in Hypothesis 1a and is more consistent with Hypothesis 1b.

Panel C provides a robustness check using long daily hours and weekend work as threshold-based versions of the two intensive margins. The estimate again does not support a substitution interpretation, but the instrument is weaker in this binary setting, with a first-stage F-statistic of 8.927.

Further evidence for the robustness of the estimated relationship between working hours and working days to alternative sample definitions, measurement choices, and fixed-effect structures are presented in the appendix.[8] The fixed-effects estimates remain close to zero across all specifications, ranging from -0.005 to 0.012. The FE-2SLS estimates are also broadly consistent with the baseline result: excluding 2015, using only the post-change period, applying the alternative conversion rule that classifies 23 monthly working days as five weekly working days, using the continuous monthly-days/4.3 measure, and adding either province-year or industry-year fixed effects all yield positive point estimates. The only negative FE-2SLS coefficient appears in the 2011–2013 prior-change subsample, but this estimate is highly imprecise and accompanied by a very weak first stage, so it should not be interpreted as evidence of substitution. Where weak-IV concerns are relevant, the Anderson–Rubin p-values provide weak-IV-robust inference; however, these tests address instrument strength rather than the exclusion restriction.

In summary, Table 6 provides no support for the negative hours–days relationship predicted by Hypothesis 1a. The FE-2SLS estimates are positive rather than negative and show robustness across different specifications.

[8]See Appendix Table A4 for details.

B. Fixed-effects evidence on working days and working hours

We now turn to the second step of the mechanism-selection exercise: whether the observed co-movement between the two margins is more consistent with Hypothesis 2a, worker-side supply incentives and constraints, or Hypothesis 2b, employer-side demand for schedule coverage. This distinction matters because complementarity can arise on either side of the market. Workers facing earnings pressure, limited outside options, or weak bargaining power may tend to accept both longer daily hours and more working days. Firms, by contrast, may expand both margins when production, service coverage, or sectoral operating needs require labor over more days and for longer periods within the day.

Table 7: Correlations for working days (7a) and working hours distribution (7b)

	Base		**+ Firm type**		**+ Industry**		**All**	
	Coef. (SE)	Sign.	Coef. (SE)	Sign.	Coef. (SE)	Sign.	Coef. (SE)	Sign.
Panel 7a. Dependent variable: Working days per week, 5.69 days on average.								
Firm type:								
State owned Enterprise			0.028 (0.028)				0.017 (0.028)	
Private owned Enterprise			0.201 (0.027)	***			0.179 (0.028)	***
Foreign funded Enterprise			0.080 (0.048)	.			0.062 (0.047)	
Other			0.094 (0.036)	**			0.085 (0.036)	*
Joint Wald $\chi^2(4)$ *(Firm type)*			67.761	***			56.612	***
Industries:								
Mining & Manufacturing					-0.027 (0.059)		-0.033 (0.059)	
Construction					-0.108 (0.066)	.	-0.123 (0.066)	.
Electricity/Heat/Gas/Water					-0.096 (0.068)		-0.090 (0.068)	
Wholesale & Retail					0.072 (0.064)		0.059 (0.064)	
Transport & Postal					0.001 (0.064)		0.000 (0.064)	
Hospitality & Food service					0.167 (0.071)	*	0.150 (0.071)	*
IT & Software					-0.018 (0.072)		-0.015 (0.072)	
Finance					-0.134 (0.070)	.	-0.122 (0.070)	.
Real Estate					0.057 (0.086)		0.047 (0.086)	
Science/Education/Culture/Health					-0.136 (0.061)	*	-0.116 (0.060)	.
Domestic/Residential/Other services					-0.016 (0.059)		-0.015 (0.058)	
Public admin. & social org.					-0.099 (0.059)	.	-0.077 (0.058)	
Other					-0.088 (0.060)		-0.077 (0.060)	
Joint Wald $\chi^2(13)$ *(Industry)*					68.033	***	54.369	***
Age (ref.: 18–24):								
Age 25–34	-0.014 (0.049)		-0.020 (0.048)		-0.011 (0.049)		-0.016 (0.048)	
Age 35–44	-0.025 (0.057)		0.017 (0.057)		0.030 (0.058)		0.023 (0.057)	
Age 45–54	-0.006 (0.066)		-0.013 (0.065)		0.000 (0.066)		-0.006 (0.065)	
Age 55+	-0.085 (0.078)		-0.088 (0.078)		-0.077 (0.078)		-0.080 (0.078)	
Joint Wald $\chi^2(4)$ *(Age)*	8.908	.	8.172	.	8.646	.	8.029	.
Education (ref.: Compulsory):								
Secondary	-0.032 (0.037)		-0.025 (0.037)		-0.028 (0.037)		-0.023 (0.037)	

Continued on next page

Table 7 (continued)

	Base		+ Firm type		+ Industry		All	
	Coef. (SE)	Sign.	Coef. (SE)	Sign.	Coef. (SE)	Sign.	Coef. (SE)	Sign.
Higher	-0.137 (0.050)	**	-0.124 (0.050)	*	-0.126 (0.050)	*	-0.117 (0.050)	*
Joint Wald $\chi^2(2)$ *(Education)*	9.913	**	8.715	*	8.568	*	7.785	*
Survey year (ref.: 2011):								
Year 2013	0.011 (0.023)		0.012 (0.023)		0.010 (0.023)		0.011 (0.023)	
Year 2015	0.015 (0.025)		0.014 (0.025)		0.017 (0.025)		0.017 (0.025)	
Year 2017	-0.031 (0.027)		-0.036 (0.027)		-0.030 (0.027)		-0.035 (0.027)	
Year 2019	-0.018 (0.031)		-0.018 (0.031)		-0.018 (0.031)		-0.018 (0.030)	
Joint Wald $\chi^2(4)$ *(Year)*	13.030	*	16.186	**	13.073	*	16.067	**
Diagnostics								
Within R^2	0.002		0.006		0.006		0.009	
N	75964		75964		75964		75964	
Model F	3.765	***	8.849	***	5.261	***	7.081	***
Panel 7b. Dependent variable: Working hours per day, 8.79 hours on average								
Firm type:								
State owned Enterprise			0.066 (0.066)				0.067 (0.067)	
Private owned Enterprise			0.204 (0.058)	***			0.196 (0.059)	***
Foreign funded Enterprise			0.076 (0.099)				0.071 (0.100)	
Other			0.169 (0.075)	*			0.160 (0.075)	*
Joint Wald $\chi^2(4)$ *(Firm type)*			14.821	**			13.329	**
Industries:								
Mining & Manufacturing					0.227 (0.117)	.	0.220 (0.117)	.
Construction					0.213 (0.125)	.	0.198 (0.125)	
Electricity/Heat/Gas/Water					0.067 (0.142)		0.072 (0.142)	
Wholesale & Retail					0.202 (0.122)	.	0.189 (0.122)	
Transport & Postal					0.306 (0.135)	*	0.305 (0.135)	*
Hospitality & Food service					0.204 (0.142)		0.188 (0.142)	
IT & Software					0.118 (0.144)		0.118 (0.144)	
Finance					0.090 (0.135)		0.098 (0.135)	
Real Estate					-0.003 (0.194)		-0.014 (0.194)	
Science/Education/Culture/Health					0.121 (0.129)		0.144 (0.129)	
Domestic/Residential & Other serv.					0.267 (0.122)	*	0.268 (0.122)	*
Public admin. & social org.					0.131 (0.121)		0.156 (0.121)	
Other					0.259 (0.119)	*	0.270 (0.119)	*
Joint Wald $\chi^2(13)$ *(Industry)*					18.182		16.897	
Age (ref.: 18–24):								
Age 25–34	0.177 (0.107)	.	0.172 (0.107)		0.175 (0.107)		0.171 (0.107)	
Age 35–44	0.174 (0.123)		0.166 (0.123)		0.171 (0.123)		0.164 (0.123)	
Age 45–54	0.141 (0.138)		0.133 (0.138)		0.138 (0.138)		0.132 (0.138)	
Age 55+	0.182 (0.167)		0.177 (0.167)		0.179 (0.166)		0.174 (0.167)	
Joint Wald $\chi^2(4)$ *(Age)*	3.459		3.337		3.401		3.288	
Education (ref.: Compulsory):								
Higher	-0.049 (0.103)		-0.034 (0.103)		-0.038 (0.103)		-0.026 (0.103)	
Secondary	-0.115 (0.080)		-0.108 (0.080)		-0.111 (0.080)		-0.105 (0.080)	
Joint Wald $\chi^2(2)$ *(Education)*	2.899		2.862		2.970		2.952	

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Table 7 (continued)

	Base		**+ Firm type**		**+ Industry**		**All**	
	Coef. (SE)	Sign.	Coef. (SE)	Sign.	Coef. (SE)	Sign.	Coef. (SE)	Sign.
Survey year (ref.: 2011):								
Year 2013	-0.083 (0.047)	.	-0.084 (0.047)	.	-0.079 (0.047)	.	-0.080 (0.047)	.
Year 2015	0.034 (0.051)		0.029 (0.051)		0.024 (0.052)		0.019 (0.052)	
Year 2017	-0.018 (0.056)		-0.024 (0.055)		-0.016 (0.056)		-0.022 (0.056)	
Year 2019	0.066 (0.064)		0.063 (0.064)		0.069 (0.064)		0.066 (0.064)	
Joint Wald $\chi^2(4)$ *(Year)*	24.954	***	24.453	***	20.536	***	20.226	***
Diagnostics								
Within R^2	0.0016		0.0024		0.0027		0.0034	
N	75964		75964		75964		75964	
Model F	3.418	***	3.725	***	2.500	***	2.723	***

Source: China Household Finance Survey (CHFS).
Period: Employees living with their family members from 2011, 2013, 2015, 2017, and 2019.
Clustered Standard Errors: Standard errors are clustered at the individual level.
Sign. level: . represents statistically significantly different from zero at the .10 level, * at the .05 level, ** at the .01 level, *** at the .001 level.
Estimation methods: All regressions are estimated using fixed effects, as preferred by the Hausman test.
Notes: Panel A reports fixed-effects estimates for working days per week, while Panel B reports fixed-effects estimates for working hours per day. All independent variables are indicator variables, except where otherwise stated. The reference categories are *Age 18–24*, *Compulsory Education*, *Year 2011*, *Civil Servant*, and *Agriculture, Forestry, Animal Husbandry and Fishery*. The first column includes demographic variables only, the second adds firm type, the third adds industry, and the final column includes all variables of interest. Appendix Table A5 reports the corresponding estimates for the binary outcomes of weekend work and long daily hours.

Table 7 presents estimates of fixed-effects regressions for working days and working hours separately. Panel A reports estimates for working days per week, while Panel B reports the corresponding estimates for working hours per day. Worker characteristics, especially education and age, provide suggestive evidence on worker-side constraints and bargaining positions, although they may also reflect sorting into different jobs. Firm type and industry are closer to employer-side scheduling environments, since they capture differences in operating needs, regulatory exposure, and production rhythms. If Hypothesis 2a were the dominant explanation, the strongest systematic variation would be expected to appear mainly in worker-side characteristics, especially variables that proxy for bargaining position, outside options, or household constraints. If Hypothesis 2b were the dominant explanation, firm type and industry should play a more prominent role, since these variables are closer to employer-side scheduling environments, operating needs, and production rhythms.

Table 7 is organized to make this comparison transparent. Within each panel, the first column includes only demographic controls, the second adds firm type, the third adds industry, and the final column reports the full specification.[9] Taken

[9]Similar specification but with binary outcomes of weekend work and night work as the dependent variable is included in Appendix Table A5, where weekend work is defined as working more than five days per week and night work is defined as working more than eight hours per day.

together, these empirical results allow us to compare whether the same factors move the two margins in similar or opposite directions.

Starting with worker-side characteristics, education remains informative, although its interpretation in a fixed-effects setting requires some caution. In Panel A of Table 7, higher education is associated with 0.117 fewer working days per week in the full specification compared to compulsory education, while no significant difference is displayed for secondary education. In Panel B, the education coefficients for working hours are again negative, but smaller and jointly statistically insignificant. This suggests that education is more strongly related to the days margin than to average daily hours. [10] Overall, the education gradient is consistent with Hypothesis 2a, because workers with stronger bargaining positions or better outside options appear less exposed to intensive schedules.

The firm-type results point more clearly toward employer-side scheduling environments. In the full specification, workers in private-owned enterprises are significantly more likely to work both more days and longer hours than civil servants, with coefficients of 0.179 for working days and 0.196 for working hours. The residual *other* firm category is also positive in both panels, although smaller in magnitude. By contrast, state-owned and foreign-funded enterprises remain closer to the civil-servant benchmark, especially for working hours. This pattern is difficult to reconcile with Hypothesis 1a: the same firm environment is associated with higher intensity on both margins rather than with an increase in one margin and a reduction in the other. It is more consistent with Hypothesis 1b, since the two margins move in the same direction within the same employer environment. Moreover, because the largest differences appear across employer types rather than only across worker-side characteristics, the result provides more direct support for Hypothesis 2b than for Hypothesis 2a. At the same time, these estimates cannot fully separate employer demand from worker sorting into firms, so the interpretation remains preliminary.

The industry results provide further evidence that schedule intensity is partly organized around employer-side operating conditions, although the pattern is less uniform than for firm type. Hospitality and food service are positively associated with working days and also have a positive, though less precisely estimated, association with working hours. Transport and postal services, domestic/residential/other services, and the residual industry category are more clearly associated with longer daily hours, while finance and science/education/culture/health are negatively associated with the days margin.[11]

In summary, the fixed-effects results deliver two main implications. First, they reinforce the conclusion from the FE-2SLS estimates that working days and work-

[10]As a robustness check, Appendix Table A5 shows the fixed effect estimates with weekend work and night work as dependent variables. where education becomes more relevant.

[11]Similar evidence is provided by Appendix Table A5 with the margins measured as weekend work and night work, suggesting industries with stronger coverage requirements or less flexible operating rhythms are more exposed to non-standard schedules, whereas sectors with more standardized schedules are less exposed and hence are consistent with Hypothesis 2b.

ing hours are not organized primarily through substitution. The signs of the main correlates are generally aligned across the two margins, especially for firm type and several industries, rather than moving in opposite directions. This alignment weakens Hypothesis 1a and is more consistent with Hypothesis 1b. Second, the results provide mixed but informative evidence on the mechanism behind this alignment. Education is consistent with Hypothesis 2a, the worker-side interpretation, but firm type and industry play a prominent role, pointing toward Hypothesis 2b, the employer-side scheduling interpretation.

VI. A Two-Sector Equilibrium Framework: Demand vs. Supply

The evidence so far narrows the set of plausible mechanisms. Section 4 shows that long workweeks and long workdays are both pervasive and often appear together. Section 5 then provides no support for the substitution between working hours and working days predicted by Hypothesis 1a: working days do not appear to be a simple residual adjustment to working hours. Instead, the FE-2SLS estimates and fixed-effects evidence are more consistent with Hypothesis 1b, or at least with joint determination by common underlying forces. The remaining question concerns Hypotheses 2a and 2b: whether this co-movement is driven mainly by worker-side supply incentives and constraints, or instead by employer-side demand for schedule coverage. The micro-level fixed-effects results provide suggestive evidence, but they cannot fully separate worker sorting from employer scheduling requirements. We therefore adopt a two-sector equilibrium framework that uses regional variation in the concentration of weekend and night work across industries to distinguish between supply-side and demand-side mechanisms.

We introduce the two-sector framework of Hamermesh and Biddle (2025) to our setting. Whereas their framework focuses on the allocation of work across four- and five-day schedules, we focus on extended working schedules relative to the conventional five-day, eight-hour benchmark. In the model, workers differ in their willingness or need to accept weekend work and night work, while firms differ in how essential such schedules are for production or service coverage. This structure delivers comparative-static predictions that differ depending on whether the observed incidence of extended working schedules (weekend/night work) is driven primarily by worker-side supply shifts or employer-side demand shifts. In this section, we first present the model and its implications for our setting, and then use province-by-year variation to assess whether the observed patterns are more consistent with Hypothesis 2a or Hypothesis 2b.

A. *Demand vs Supply: Two-sector Model*

Model setting

We first split workers and firms into two types. On the worker side, we distinguish weekend/night-tolerant workers (Type t), those more likely to accept weekend/night schedules (observed working more than 5 days per week/working more than 8 hours per day)[12], and weekend/night-averse workers (Type a), those who typically work at most 5 days per week and at most 8 hours per day. Let $\tau \in (0, 1)$ denote the population share of weekend/night-tolerant workers. For simplicity, we normalize the wage for a standard five-day/daytime job to 1 and set the wage for weekend/night work to $w > 1$. For a given weekend/night wage w, let $F_j(w)$ denote the cumulative distribution of reservation wages for Type j workers, and let $f_j(w) = F_j'(w)$ be the associated density, where $j \in \{t, a\}$. We assume that for any given w, the probability that the true reservation wage is w or lower is higher for weekend/night-tolerant workers ($F_t(w)$) than for weekend/night-averse workers ($F_a(w)$). Thus, $F_a(w)$ is smaller than or equal to $F_t(w)$, which means that the reservation-wage distribution of weekend/night-averse workers first-order stochastically dominates that of weekend/night-tolerant workers, as shown in (1).

$$F_a(w) \leq F_t(w) \quad \text{for all relevant } w. \tag{1}$$

This is a level ranking: at any given weekend/night premium w, a larger fraction of weekend/night-tolerant workers is willing to accept weekend/night work than weekend/night-averse workers. Additionally, we assume $F_a = F_t$ at the minimal reservation wage. Economically, weekend/night-tolerant workers are therefore the group more tolerant of undesirable schedules.

Given (τ, w), the aggregate supply of weekend/night work is

$$S(\tau, w) = \tau F_t(w) + (1 - \tau) F_a(w). \tag{2}$$

Moreover, the share of weekend/night work supplied by weekend/night-tolerant workers is

$$\phi_t^S(\tau, w) = \frac{\tau F_t(w)}{\tau F_t(w) + (1 - \tau) F_a(w)}. \tag{3}$$

On the firm side, we likewise distinguish weekend/night-intensive employers (Type t), for whom weekend/night operations are inherently valuable, and weekend/night-averse employers (Type a), for whom operating on weekends or requiring long daily hours is relatively less demanded.[13] Let $\iota \in (0, 1)$ denote the share of weekend/night-intensive employers. For a given salary w, let $G_j(w)$ denote the cumulative distribution of reservation wages for Type j firms. Then $1 - G_j(w)$ is the fraction of Type j firms for which it is profitable to offer weekend/night work at wage w, and $g_j(w)$ is the density of $G_j(w)$. Since weekend/night-intensive firms are more willing to provide weekend/night work

[12] In applying the framework to the hours margin, *night* should be read as shorthand for long daily hours, since the CHFS records duration but not clock timing.

[13] Although we apply a similar model to both weekend and long-hours dimensions, one economic sector may be identified as Type t for weekend work but Type a for long daily hours, or vice versa. The specific classification for both margins is provided in Appendix Table A8.

than weekend/night-averse firms at any given wage w, we assume

$$G_t(w) \leq G_a(w). \tag{4}$$

This is again a level ranking: at any given firm reservation wage, a larger fraction of weekend/night-intensive firms still find weekend/night operation profitable. Economically, weekend/night-intensive firms are those in which weekend/night operations are more essential.

The aggregate demand for weekend/night work is then

$$D(\iota, w) = \iota[1 - G_t(w)] + (1 - \iota)[1 - G_a(w)]. \tag{5}$$

Similar to Hamermesh and Biddle (2025), we assume that demand for weekend/night work in weekend/night-intensive industries is less wage-sensitive in proportional terms than in weekend/night-averse industries in terms of the hazard rate:

$$\frac{g_t(w)}{1 - G_t(w)} \leq \frac{g_a(w)}{1 - G_a(w)}. \tag{6}$$

The object $\frac{g_j(w)}{1-G_j(w)} = -\frac{d}{dw}\ln(1 - G_j(w))$ is the hazard rate of the reservation-salary distribution for Type j firms. It measures the proportional decline in active demand when the wage rises. Hence, (6) says that the active share of weekend/night-intensive firms shrinks more slowly, in proportional terms, than the active share of weekend/night-averse firms when weekend/night work becomes more expensive. This captures the idea that in sectors where weekend/night operations are technologically or commercially essential, staffing on weekends or during long daily schedules is less avoidable and labor demand is therefore less wage-sensitive in proportional terms.

Condition (6) is compatible with the first-order stochastic dominance condition in (4), but the two assumptions should be interpreted separately. Equation (4) ranks levels: at a given premium, more weekend/night-intensive firms remain active. By contrast, (6) ranks local proportional responses: as the premium increases, weekend/night-intensive firms withdraw from weekend/night operation more slowly than weekend/night-averse firms. Hence, (6) means that the demand for weekend/night work among weekend/night-intensive firms contracts at least as slowly, in proportional terms, as that among weekend/night-averse firms when the premium rises. In this sense, the demand gap between weekend/night-intensive and weekend/night-averse firms widens as weekend/night work becomes more expensive. This is intuitive in the present context: firms whose production or service model relies more heavily on weekend/night operation have less scope to reschedule activity to standard weekdays or standard daily hours, so a higher premium reduces their weekend/night labor demand less sharply than it does for firms for whom such work is more discretionary.

Before turning to equilibrium, we similarly calculate the share of weekend/night work offered by weekend/night-intensive firms:

$$\phi_t^D(w,\iota) = \frac{\iota(1-G_t(w))}{\iota(1-G_t(w)) + (1-\iota)(1-G_a(w))}. \tag{7}$$

The corresponding share for weekend/night-averse firms is

$$\phi_a^D(w,\iota) = \frac{(1-\iota)(1-G_a(w))}{\iota(1-G_t(w)) + (1-\iota)(1-G_a(w))} = 1 - \phi_t^D(w,\iota). \tag{8}$$

We then move to equilibrium and comparative statics.

Equilibrium and comparative statics

To characterize the comparative statics of the population share of weekend/night-tolerant workers (τ) and the share of weekend/night-intensive firms (ι), we first define the equilibrium. The wage w for weekend/night work is determined by market-clearing between weekend/night work supplied and weekend/night work demanded:

$$Q^* = \underbrace{\tau F_t(w) + (1-\tau)F_a(w)}_{S(\tau,w(\tau,\iota))} = \underbrace{\iota[1-G_t(w)] + (1-\iota)[1-G_a(w)]}_{D(\iota,w(\tau,\iota))}. \tag{9}$$

where Q^* is the equilibrium amount of weekend/night work. Define

$$H(\tau,\iota,w) \equiv \tau F_t(w) + (1-\tau)F_a(w) - \iota[1-G_t(w)] - (1-\iota)[1-G_a(w)]. \tag{10}$$

Equilibrium requires $H(\tau,\iota,w) = 0$. A positive value of (10) represents excess supply, while a negative value represents excess demand. We treat the market-clearing wage w^* as an implicit function of (τ,ι), denoted $w^*(\tau,\iota)$, defined by

$$H(\tau,\iota,w^*(\tau,\iota)) = 0.$$

Under this setting, we obtain two comparative-static propositions.

PROPOSITION 1: *Under the worker-side level-ranking assumption in* (1) *and the firm-side level-ranking assumption in* (4)*, we have*

$$\frac{\partial w^*}{\partial \tau} < 0, \quad \frac{\partial w^*}{\partial \iota} > 0, \quad \frac{\partial Q^*}{\partial \tau} > 0, \quad \textit{and} \quad \frac{\partial Q^*}{\partial \iota} > 0. \tag{11}$$

Proofs for the propositions can be found in the appendix[14]. Proposition 1 describes the comparative statics of the equilibrium wage and the equilibrium

[14]See Appendix subsection B.B1 for details.

amount of weekend/night work with respect to worker and firm composition. Since we normalize the wage for standard five-day/eight-hour work to 1, an increase in the share of weekend/night-tolerant workers τ shifts supply outward and decreases the relative wage of weekend/night work, shrinking the weekend/night wage premium $w-1$. By contrast, an increase in the share of weekend/night-intensive employers ι shifts demand outward and increases the wage premium of weekend/night work, thereby inducing additional labor supply.

Although both τ and ι increase the equilibrium amount of weekend/night work Q^*, they reflect different mechanisms. First, when the share of weekend/night-tolerant workers τ rises, equilibrium supply shifts outward. This lowers the weekend/night wage premium, and the fall in w then makes weekend/night operation profitable for a larger fraction of firms, so demand expands and the equilibrium amount of weekend/night work rises. Thus, even though the weekend/night premium falls, total weekend/night work increases in equilibrium. Second, when the share of weekend/night-intensive firms ι rises, equilibrium demand shifts outward. This raises the weekend/night wage premium. The higher premium then induces more workers to accept weekend/night jobs, so supply expands and the equilibrium amount of weekend/night work again rises. In short, both a larger share of weekend/night-tolerant workers and a larger share of weekend/night-intensive firms increase equilibrium weekend/night work, but they do so from opposite sides of the market and with opposite effects on the equilibrium premium.[15]

In addition to the movement of w^* and Q^*, we also explore how the equilibrium share of weekend/night work provided by weekend/night-intensive firms is affected by changes in τ and ι. This is stated in Proposition 2.

PROPOSITION 2: *Under the firm-side level-ranking assumption in* (4) *and the hazard-rate ranking in* (6)*, we have*

$$\frac{d\phi_t^D(w^*,\iota)}{d\tau} \leq 0, \quad \textit{and} \quad \frac{d\phi_t^D(w^*,\iota)}{d\iota} \geq 0. \tag{12}$$

Proposition 2 states that the share of weekend/night work provided by weekend/night-intensive industries, $\phi_t^D(w^*,\iota)$, weakly decreases when the supply-side share of weekend/night-tolerant workers τ rises, but weakly increases when the demand-side share of weekend/night-intensive firms ι rises. Thus, if the expansion of weekend/night work is introduced through supply, the equilibrium share of such work accounted for by weekend/night-intensive industries falls. If the expansion is introduced through demand, the equilibrium share accounted for by weekend/night-intensive industries rises.

The intuition for the supply-driven case is as follows. An increase in τ expands the supply of workers willing or constrained to accept weekend/night work and lowers the equilibrium premium. Because weekend/night-averse firms are more

[15]Appendix Figure A1 shows graphically how changes in τ and ι affect the equilibrium wage w^* and the equilibrium quantity Q^*.

wage-sensitive in proportional terms under (6), the fall in the premium induces a relatively larger expansion of weekend/night work among weekend/night-averse firms. As a result, even though total weekend/night work Q^* increases, the share provided by weekend/night-intensive firms, $\phi_t^D(w^*, \iota)$, falls. In this case, Q^* and $\phi_t^D(w^*, \iota)$ move in opposite directions.

This contrasts with the demand-driven case, where a rise in the share of weekend/night-intensive employers ι increases both the total amount of weekend/night work at equilibrium, Q^*, and the share of weekend/night work offered by weekend/night-intensive firms, $\phi_t^D(w^*, \iota)$. Therefore, in contrast to the supply shift caused by τ, Q^* and $\phi_t^D(w^*, \iota)$ move in the same direction when the shift is driven by ι.

B. Model Verification and Implications

The comparative statics in subsection VI.A deliver empirically testable sign restrictions that differ depending on whether weekend/night incidence is driven primarily by employers' operating needs (a demand shift, changes in ι) or by workers' willingness or need to supply non-standard schedules (a supply shift, changes in τ). In particular, a demand-driven expansion predicts that (i) local markets with a higher share of weekend/night-intensive firms (ι) should exhibit a higher equilibrium incidence of weekend/night work (Q), $\partial Q/\partial \iota > 0$ (equation (11)), and (ii) increases in Q should be absorbed disproportionately by weekend/night-intensive industries, implying $d\phi_t^D(w, \iota)/d\iota > 0$ and $d\phi_a^D(w, \iota)/d\iota < 0$ (equation (12) and its analogue for ϕ_a^D). This is the empirical implication of Hypothesis 2b, or employer-side complementarity: when non-standard schedules expand because firms require broader service coverage or longer operating time, the expansion should be concentrated in industries where weekend/night work is commercially or technologically more essential.

A supply-driven account, by contrast, would generate the opposite concentration pattern across industries, since a higher availability of weekend/night-tolerant workers would reduce the weekend/night premium. It predicts that (i) local markets with a higher share of weekend/night-tolerant workers (τ) should exhibit a higher equilibrium incidence of weekend/night work (Q), $\partial Q/\partial \tau > 0$ (equation (11)), and (ii) increases in Q should be absorbed disproportionately by weekend/night-averse industries, implying $d\phi_t^D(w, \iota)/d\tau < 0$ and $d\phi_a^D(w, \iota)/d\tau > 0$ (equation (12) and its analogue for ϕ_a^D). This is the empirical implication of Hypothesis 2a, or worker-side complementarity: when non-standard schedules expand because more workers are willing or constrained to accept them, the lower premium makes weekend/night work more attractive even for industries where such schedules are not intrinsically necessary. Under Hypothesis 2a, we should therefore observe higher overall weekend/night incidence together with a weaker concentration of such work in weekend/night-intensive industries.

Mapping from notations to empirical results: segmenting jobs and industries

To take these implications to the data, we first map the theoretical objects to empirical indicators. We classify jobs into (i) weekend/night work versus non-weekend/night work, and (ii) jobs located in weekend/night-intensive versus weekend/night-averse industries. Figure 1 summarizes the resulting 2×2 partition.

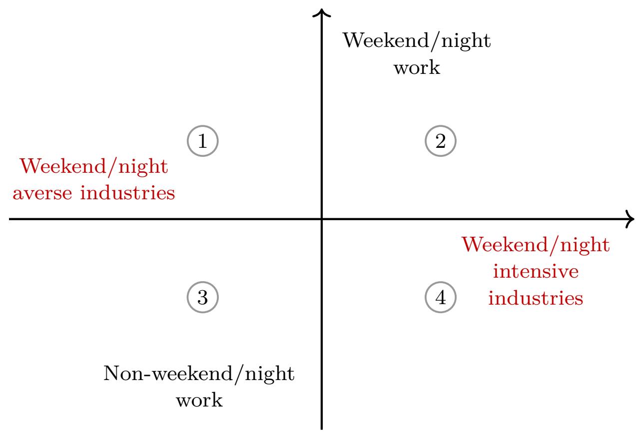


Figure 1. : Work segments by work type and industry

Note: Jobs can be divided into four segments depending on working intensity and industry. Area 1 represents weekend/night work offered by weekend/night-averse industries, Area 2 represents weekend/night work offered by weekend/night-intensive industries, Area 3 represents non-weekend/night work offered by weekend/night-averse industries, and Area 4 represents non-weekend/night work offered by weekend/night-intensive industries. Weekend- and night-intensive (averse) industries are defined using the pooled pre-period waves 2011 and 2013: for each margin, we compute the national industry share of weekend work (working more than 5 days per week) or long daily hours (working more than 8 hours per day), rank industries by this pre-period share, and classify the top seven (bottom seven) industries as intensive (averse). This classification is then held fixed and applied to all waves (2011–2019) when constructing the province-year decomposition measures in Section VI. More specific information is provided in Table A8.

The horizontal split in Figure 1 separates the weekend/night work from the non-weekend/night work depending on whether one works more than 5 days per week/8 hours per day. The vertical split distinguishes the *industry type*, which is the empirical counterpart of the firm-side heterogeneity in the model. Concretely, for each margin, we compute national industry incidence using the pooled pre-period waves 2011 and 2013, rank industries by this pre-period incidence, and define weekend/night-intensive (Type t firms) and weekend/night-averse (Type a employers) industries as the top and bottom seven industries in this ranking, respectively. This classification is reported in Appendix[16], which also documents the incidence rates used for the ranking, and it is held fixed when we construct province-year decomposition measures for all waves 2011–2019.

[16]See Appendix Table A8 for details.

Two considerations motivate using only the pre-period waves to define industry type rather than pooling all waves. First, our demand-versus-supply exercise exploits province-by-year variation in the incidence and concentration of extended schedules; constructing the industry classification from the full 2011–2019 sample would risk reintroducing the same outcome variation into the definition of "intensive" industries. Freezing the classification based on pre-period national shares makes industry type predetermined with respect to subsequent province-year movements. Second, the CHFS changes the measurement of working days after 2015 (weekly to monthly reports), requiring a conversion to a weekly-equivalent measure; defining the ranking in 2011–2013 ensures that the industry classification is not driven by the post-2015 measurement regime or by discretizations choices around the five-day cutoff.[17] Intuitively, weekend/night-intensive industries are those where weekend/night work is more commercially or technologically essential, whereas weekend/night-averse industries contain tasks that are more easily rescheduled to standard times.

Moreover, this industry classification is consistent with independent evidence on working-time organization in China. Based on an employee survey conducted in Beijing, Guangzhou, and Changsha in 2003–2004, Zeng et al. (2005) document substantial sectoral heterogeneity in nonstandard working time: weekend work is relatively common in wholesale and retail, real estate, construction, and manufacturing, while finance is much less exposed; longer working hours are also more pronounced in electricity, gas and water supply, construction, wholesale and retail, and manufacturing. These patterns align closely with our distinction between weekend/night-intensive and weekend/night-averse industries. Since this evidence comes from an earlier, independent survey rather than the CHFS province-year variation used below, our classification can be interpreted as capturing exogenous sectoral operating requirements rather than endogenously generated by the equilibrium incidence of weekend/night work in our estimation sample.

Therefore, the four areas in Figure 1 correspond to: weekend/night work in weekend/night-intensive industries (Area ①), non-weekend/night work in weekend/night-intensive industries (Area ②), weekend/night work in weekend/night-averse industries (Area ③), and non-weekend/night work in weekend/night-averse industries (Area ④).[18] In particular, we construct $\phi_t^D(w,\iota)$ as the province-year share of weekend/night work that occurs in weekend/night-intensive industries (Area ① divided by Areas ① + ③), with $\phi_a^D(w,\iota) = 1 - \phi_t^D(w,\iota)$ defined analogously for weekend/night-averse industries (Area ③ divided by Areas ① + ③). As for the equilibrium share of weekend/night work $Q(\tau,\iota)$, we measure it as the province-year share of workers in weekend/night schedules (Areas ① + ③ divided by all areas).

[17]As a robustness check, the classification for weekend/night-intensive industries remains the same even when using all waves, with some shifts in rank within these industries.

[18]Appendix Table A7 summarizes the full mapping between theoretical objects and empirical counterparts in detail.

Empirical evidence and implications

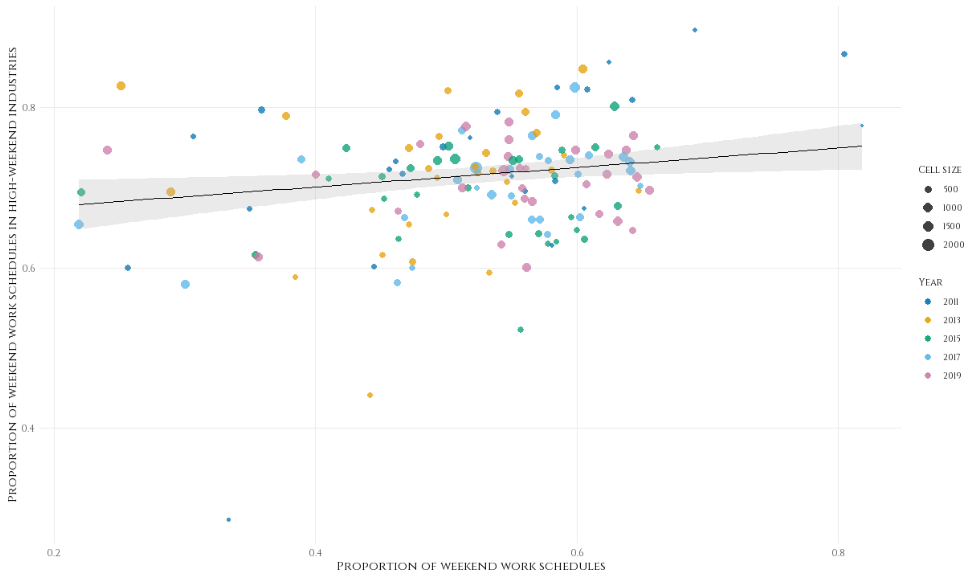
We now use province-by-year variation to implement the comparative-static test implied by subsection VI.A. The key empirical object is the relationship between the overall incidence of weekend/long-hours work, $Q_{p,t}$, and local exposure to weekend/long-hours-intensive industries, $\phi^D_{p,t}(w,\iota)$. A positive relationship is consistent with Hypothesis 2b: non-standard schedules expand where employer operating needs are strongest. A negative relationship would instead be more consistent with Hypothesis 2a, since a larger supply of workers willing or constrained to accept such schedules would allow weekend/long-hours work to spread relatively more into industries where these schedules are not intrinsically necessary.

Figure 2 implements the central comparative-static test of the model. Each point is a province-year observation. The horizontal axis reports the overall incidence of weekend/long-hours work, $Q_{p,t}$, while the vertical axis reports $\phi^D_{p,t}(w,\iota)$, the share of such work provided by weekend/long-hours-intensive industries. The relationship is positive for both weekend work and long daily hours. Local labor markets with a higher incidence of non-standard schedules also exhibit a larger concentration of those schedules in intensive industries. This is the pattern predicted by a demand-driven expansion: if cross-market differences in non-standard schedules are mainly driven by employer composition, then both $Q_{p,t}$ and $\phi^D_{p,t}(w,\iota)$ should move in the same direction. By contrast, under a supply-driven expansion, $Q_{p,t}$ would rise but $\phi^D_{p,t}(w,\iota)$ would fall, because the additional non-standard work would be absorbed relatively more by weekend/long-hours-averse industries. At the reduced-form level, the positive slope in Figure 2 is therefore more consistent with Hypothesis 2b than with Hypothesis 2a.

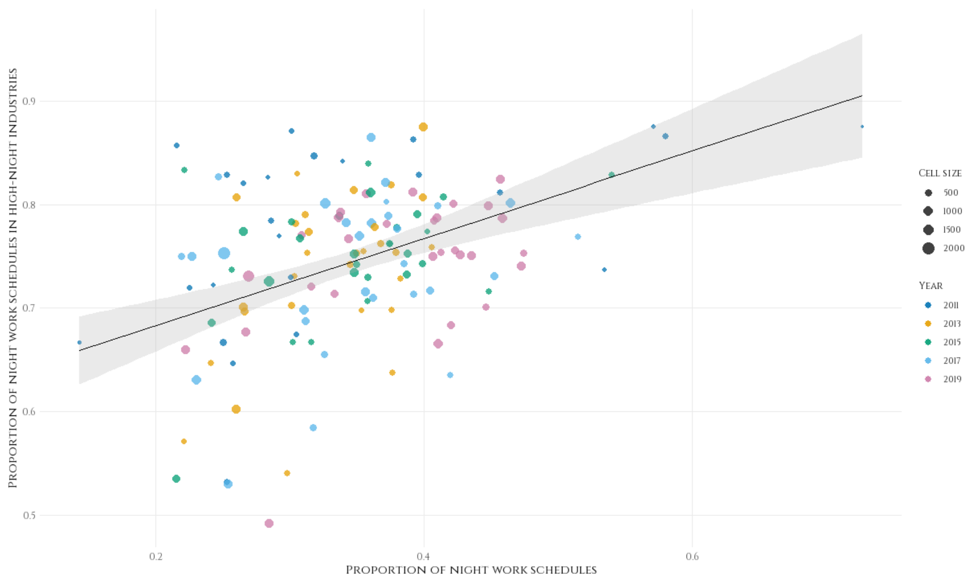
The economic interpretation follows directly from Proposition 2. A rise in employer exposure to weekend/long-hours-intensive activity increases both the equilibrium amount of non-standard work, $Q_{p,t}$, and the share of that work provided by intensive industries, $\phi^D_{p,t}(w,\iota)$. By contrast, a supply shift generated by a larger share of weekend/long-hours-tolerant workers also raises $Q_{p,t}$, but reduces the equilibrium share of non-standard work accounted for by intensive industries. The positive slope in Figure 2 therefore supports the demand-driven interpretation in Hypothesis 2b. Put differently, the cross-market expansion of weekend work and long daily hours appears to be governed more by employer composition and sectoral operating needs than by workers' willingness to supply undesirable schedules.

This result also helps interpret the earlier evidence on the relationship between working days and working hours. The descriptive patterns and FE-2SLS estimates suggest that the two margins are not organized through the simple substitution relationship stated in Hypothesis 1a. The model-based evidence adds that the common force behind this co-movement appears more consistent with Hypothesis 2b, employer-side scheduling requirements, than with Hypothesis 2a, worker-side willingness or constraints. In this sense, Figure 2 does not merely reinforce the absence of substitution; it helps identify the side of the market through which

Figure 2. : Shifts of weekend/night-work incidence ($Q_{p,t}$) with respect to intensive-industry exposure ($\phi^D_{p,t}$)



(a) For weekend work.



(b) For night work.

Source: China Household Financial Survey (CHFS) from 2011, 2013, 2015, 2017, and 2019, including 29 provinces and $N = 141$ province-year cells.
Note: Each point is a province-year cell. The horizontal axis is the overall incidence of weekend work or long daily hours, $Q_{p,t}$. The vertical axis is the share of weekend-work or long-hours schedules located in weekend/long-hours-intensive industries, $\phi^D_{p,t}$. Marker size is proportional to the number of observations in the corresponding province-year cell, and colors distinguish survey years. Weekend work is defined as working more than five days per week. Long daily hours are defined as working more than eight hours per day. Industries are classified as intensive using the full-sample national ranking of industry-level weekend-work or long-hours incidence.
Regression: The fitted lines are weighted least-squares fits, with weights equal to province-year cell size; the shaded areas report the 95% confidence band around the fitted mean. The corresponding province-year regressions include 140 province-year cells from 29 provinces. The estimated coefficient on overall incidence is 0.368 (SE = 0.098) for weekend work and 0.406 (SE = 0.113) for night work; both are statistically significant at the 1% level. The corresponding R^2 values are 0.679 and 0.723, respectively, standard errors are clustered at the province level.

complementarity under Hypothesis 1b is more likely to arise.[19]

VII. Conclusion

This paper studies extended work schedules in China, an expanding economy, through the lens of working days. Using panel data from the China Household Finance Survey (CHFS) over 2011–2019, it examines whether working days and working hours behave as substitutes or complements in work schedules, and it explores whether extended schedules are more consistent with worker-side incentives and constraints or with employer-side scheduling requirements. The empirical evidence is not consistent with Hypothesis 1a, the substitution hypothesis, and is instead more consistent with Hypothesis 1b, the complementarity hypothesis. Descriptively, long workweeks and long workdays are both widespread, and their joint distribution does not display the clear offsetting pattern that a simple substitution view would predict. An instrumented sensitivity exercise using FE-2SLS does not yield a negative hours-days relationship; if anything, the informative estimates are modestly positive, although inference varies across specifications and subsamples. At the employee level, fixed-effects evidence shows that working days and working hours are associated with several similar observable factors, especially education, firm type, and industry. At the aggregate level, the two-sector framework indicates that markets with a higher incidence of weekend work and night work also exhibit a larger share of such work concentrated in weekend/night-intensive industries. Taken together, these results suggest that working days are not well described as a residual adjustment to working hours. Instead, the two margins exhibit a potential complementarity and appear to move together under common conditions, with the evidence pointing more toward Hypothesis 2b, employer-side scheduling requirements, than toward Hypothesis 2a, a worker-side-dominant mechanism.

[19]As robustness checks, Appendix Figures A2 implements a leave-one-province-out (LOPO) classification. For each province, industries are ranked using the national pre-period incidence of weekend work or long daily hours in 2011–2013, excluding the province itself. Appendix Figure A3 further shows that the result is not driven by the particular cutoff used to define intensive and averse industries. Both show the same interpretation as Figure 2.

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Appendix

Table A1: Joint distribution of working days and working hours by facets

Working hours/day	**Working days/week** 0–3	4	5	6	7	**Total**
Panel A: Overall (75,964 observations, 5.69 days and 8.79 hours on average)						
$[0, 2)$	0.10%	0.01%	0.03%	0.01%	0.03%	0.18%
$[2, 4)$	0.14%	0.06%	0.24%	0.10%	0.23%	0.77%
$[4, 6)$	0.25%	0.19%	0.71%	0.29%	0.73%	2.17%
$[6, 8)$	0.24%	0.34%	3.78%	1.81%	1.77%	7.94%
$= 8$	0.97%	1.07%	**28.45%**	13.63%	10.32%	54.44%
$(8, 10]$	0.55%	0.90%	4.85%	6.30%	8.15%	20.75%
> 10	0.62%	1.65%	2.14%	2.72%	6.63%	13.76%
Total	2.87%	4.22%	40.20%	24.86%	27.86%	100.00%
Panel B: Female (31,438 observations, 5.69 days and 8.51 hours on average)						
$[0, 2)$	0.07%	0.01%	0.04%	0.01%	0.03%	0.16%
$[2, 4)$	0.15%	0.08%	0.33%	0.11%	0.32%	0.99%
$[4, 6)$	0.20%	0.20%	0.83%	0.37%	0.82%	2.42%
$[6, 8)$	0.22%	0.34%	4.58%	2.49%	2.40%	10.03%
$= 8$	0.87%	0.74%	**31.32%**	15.05%	9.61%	57.59%
$(8, 10]$	0.37%	0.48%	4.30%	5.93%	7.20%	18.28%
> 10	0.41%	1.15%	1.62%	2.29%	5.08%	10.55%
Total	2.29%	3.00%	43.02%	26.25%	25.46%	100.00%
Panel C: Male (44,526 observations, 5.69 days and 8.98 hours on average)						
$[0, 2)$	0.12%	0.01%	0.02%	0.01%	0.02%	0.18%
$[2, 4)$	0.13%	0.05%	0.17%	0.08%	0.17%	0.60%
$[4, 6)$	0.28%	0.19%	0.63%	0.23%	0.67%	2.00%
$[6, 8)$	0.25%	0.33%	3.21%	1.33%	1.33%	6.45%
$= 8$	1.04%	1.31%	**26.43%**	12.63%	10.83%	52.24%
$(8, 10]$	0.68%	1.20%	5.24%	6.56%	8.82%	22.50%
> 10	0.77%	2.00%	2.51%	3.02%	7.73%	16.03%
Total	3.27%	5.09%	38.21%	23.86%	29.57%	100.00%
Panel D: Higher-educated (15,218 observations, 5.30 days and 8.28 hours on average)						
$[0, 2)$	0.10%	0.01%	0.05%	0.01%	0.01%	0.18%
$[2, 4)$	0.08%	0.03%	0.25%	0.05%	0.03%	0.44%
$[4, 6)$	0.20%	0.16%	0.53%	0.16%	0.11%	1.16%
$[6, 8)$	0.19%	0.18%	6.97%	1.48%	0.37%	9.19%
$= 8$	0.60%	0.33%	**54.32%**	11.23%	3.65%	70.13%
$(8, 10]$	0.20%	0.12%	6.57%	4.66%	2.45%	14.00%
> 10	0.18%	0.38%	1.49%	1.19%	1.66%	4.90%
Total	1.55%	1.21%	70.18%	18.78%	8.28%	100.00%
Panel E: Non-higher-educated (60,746 observations, 5.79 days and 8.91 hours on average)						
$[0, 2)$	0.10%	0.01%	0.03%	0.01%	0.03%	0.18%
$[2, 4)$	0.15%	0.07%	0.24%	0.11%	0.28%	0.85%
$[4, 6)$	0.26%	0.20%	0.76%	0.32%	0.89%	2.43%
$[6, 8)$	0.25%	0.37%	2.98%	1.90%	2.12%	7.62%
$= 8$	1.06%	1.26%	**21.97%**	14.23%	11.99%	50.51%
$(8, 10]$	0.64%	1.10%	4.42%	6.71%	9.57%	22.44%
> 10	0.73%	1.97%	2.31%	3.10%	7.88%	15.99%
Total	3.19%	4.98%	32.71%	26.38%	32.76%	100.00%

Source: China Household Financial Survey (CHFS).
Period: 2011, 2013, 2015, 2017, 2019, with employees only.
Notes: Columns denote working *days per week*; rows denote working *hours per day*. Cells report the percentage of employees in each days–hours combination. Totals may not equal 100 due to rounding.

Table A2: Adjustment of Working Hours/Days by Year, Gender, and Job Type.

Hours/Days change	Days ↑	Days =	Days ↓	*Row total*	Days ↑	Days =	Days ↓	*Row total*
Overall					*Over-time: ≥ 8 hours/day and ≥ 5 days/week*			
All observations: 21,716 observations					*11,733 observations*			
Hours ↑	5.23	11.60	4.89	*21.72*	3.00	10.30	5.82	*19.10*
Hours =	10.10	**38.49**	9.91	*58.50*	6.88	**29.30**	16.50	*52.70*
Hours ↓	4.65	10.11	5.02	*19.78*	5.29	14.20	8.72	*28.20*
Column total	*19.98*	*60.20*	*19.82*	*100.00*	*15.20*	*53.80*	*31.00*	*100.00*
Female only: 8,813 observations					*4,501 observations*			
Hours ↑	4.75	12.03	4.77	*21.55*	2.53	10.40	5.84	*18.80*
Hours =	9.21	**41.47**	9.27	*59.95*	6.02	**32.00**	16.20	*54.20*
Hours ↓	4.30	9.93	4.25	*18.48*	4.91	14.20	7.89	*27.00*
Column total	*18.26*	*63.42*	*18.29*	*100.00*	*13.50*	*56.60*	*29.90*	*100.00*
Male only: 12,903 observations					*7,232 observations*			
Hours ↑	5.56	11.27	4.98	*21.81*	3.29	10.20	5.81	*19.30*
Hours =	10.72	**36.44**	10.35	*57.51*	7.41	**27.60**	16.70	*51.70*
Hours ↓	4.90	10.23	5.54	*20.67*	5.53	14.20	9.24	*29.00*
Column total	*21.18*	*57.94*	*20.88*	*100.00*	*16.20*	*52.00*	*31.80*	*100.00*
Standard: = 8 hours/day and = 5 days/week					*Part-time: ≤ 8 hours/day and ≤ 5 days/week*			
All observations: 6,544 observations					*3,439 observations*			
Hours ↑	4.89	5.46	1.28	*11.60*	13.50	27.70	8.61	*49.80*
Hours =	14.60	**63.70**	1.45	*79.80*	12.50	**21.90**	3.52	*38.00*
Hours ↓	1.79	6.37	0.46	*8.62*	7.94	3.26	1.05	*12.20*
Column total	*21.30*	*75.50*	*3.19*	*100.00*	*34.00*	*52.90*	*13.20*	*100.00*
Female only: 2,848 observations					*1,464 observations*			
Hours ↑	3.90	4.85	0.63	*9.38*	13.20	31.00	9.56	*53.80*
Hours =	14.40	**65.30**	1.05	*80.80*	8.95	**24.20**	3.96	*37.20*
Hours ↓	2.39	7.13	0.32	*9.83*	6.15	2.25	0.68	*9.08*
Column total	*20.70*	*77.30*	*2.00*	*100.00*	*28.30*	*57.50*	*14.20*	*100.00*
Male only: 3,696 observations					*1,975 observations*			
Hours ↑	5.65	5.93	1.79	*13.40*	13.70	25.20	7.90	*46.80*
Hours =	14.80	**62.40**	1.76	*79.00*	15.20	**20.20**	3.19	*38.60*
Hours ↓	1.33	5.79	0.57	*7.68*	9.27	4.00	1.32	*14.60*
Column total	*21.80*	*74.10*	*4.11*	*100.00*	*38.20*	*49.40*	*12.40*	*100.00*

Source: China Household Financial Survey (CHFS).
Period: 2011, 2013, 2015, 2017, 2019.
Notes: Rows classify changes in working *hours* (increase, same, decrease); columns classify changes in working *days*. Row and column totals are italicized and sum to 100 within each block (up to rounding). Numbers in bold represent the %age of individuals with no adjustment on either margin (Hours = and Days =). The *Overall* blocks are computed as weighted averages of the Standard, Over-time, and Part-time blocks within each subgroup using the corresponding subgroup counts.

Table A3: Fixed-effects regressions including self-report as an explanatory variable

Sig.	Working days	Working hours	Weekend work	Night work
Panel A. Coefficient on self-report indicator				
Self-report	-0.033	-0.241***	-0.008	-0.029**
	(0.022)	(0.050)	(0.010)	(0.010)
Panel B. Diagnostics				
Within R^2	0.008	0.005	0.011	0.006
Model F-statistic	7.14	3.74	8.09	4.85
Sign. (Model F)	***	***	***	***
Observations (N)	75,964	75,964	75,964	75,964
Individuals	54,395	54,395	54,395	54,395
Individual FE	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes

Source: China Household Finance Survey (CHFS).
Period: Employees living with a partner, 2011, 2013, 2015, 2017, and 2019.
Notes: Each column reports a separate fixed-effects regression with the dependent variable indicated in the column header. The key regressor is a self-report indicator (equal to one for self-reported workers). All specifications include individual fixed effects. Year fixed effects are included in all columns except Working days (to match the baseline specification). All regressions include the same controls as in Table 6 (age, education, industry, firm type, region, and rural residence; coefficients omitted for brevity). Night work is a shorthand for long daily hours, defined as working more than eight hours per day; the CHFS does not record clock time.
Clustered Standard Errors: Standard errors in parentheses are clustered at the individual level.
Significance levels: $.p < 0.10$, $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table A4: Robustness checks: fixed-effects and FE-2SLS estimates of working hours on working days

	Dependent variable: working days per week							
	Baseline	**Excl. 2015**	**Prior-change**	**Post-change**	**Alt. conversion**		**Prov.-year FE**	**Ind.-year FE**
	2011–2019	no 2015	2011–2013	2015–2019	23 days = 5	Monthly days/4.3	2011–2019	2011–2019
Panel A. Fixed effects								
Working hours	0.007	0.012.	0.012	-0.005	0.008	0.001	0.007	0.006
Clustered SE	(0.005)	(0.007)	(0.017)	(0.007)	(0.005)	(0.006)	(0.005)	(0.005)
Panel B. FE-2SLS								
Working hours	0.178.	0.280	-0.979	0.204.	0.201.	0.202.	0.171.	0.187.
Clustered SE	(0.097)	(0.186)	(1.676)	(0.110)	(0.104)	(0.105)	(0.095)	(0.096)
First-stage F	23.36	7.55	1.42	19.82	21.92	23.36	23.95	24.36
AR p-value: $\beta = 0$	0.048	0.073	0.479	0.041	0.033	0.034	0.054	0.033
Observations (N)	75,964	60,895	16,677	59,287	75,334	75,964	75,964	75,964
Individuals	54,395	49,179	14,825	46,982	53,998	54,395	54,395	54,395
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Province-year FE	No	No	No	No	No	No	Yes	No
Industry-year FE	No	No	No	No	No	No	No	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: China Household Finance Survey (CHFS), employees, 2011–2019. *Column definitions:* **Baseline** pools all waves; working days are directly reported in 2011/2013 and converted from monthly reports in 2015/2017/2019 using the baseline rule in Table 1. **Excl. 2015** drops the 2015 wave. **Prior-change** uses only 2011–2013, when working days are directly reported weekly. **Post-change** uses only 2015–2019, when working days are reported monthly and converted to weekly. Under **Alt. conversion**, **23 days = 5** maps 23 monthly working days to 5 weekly working days, while **Monthly days**/4.3 directly divides monthly working days by 4.3 rather than applying the discrete conversion rule. **Prov.-year FE** replaces common year effects with province×year fixed effects; **Ind.-year FE** adds industry×year fixed effects. *Estimation and controls:* Panel A reports fixed-effects estimates of working days per week on working hours per day, using the same time-varying covariates as the *All* specification in Table 7. Panel B reports FE-2SLS estimates instrumenting working hours per day with the self-report indicator, using the same specification and controls as Table 6. Standard errors in parentheses are clustered at the individual level. "First-stage F" measures instrument relevance; "AR p-value" reports Anderson–Rubin inference for $\beta = 0$ in the second stage. *Significance:* a trailing dot "." denotes $p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table A5: Fixed-effects estimates: Night work (A5a) and Weekend work (A5b)

	Base		**+ Firm type**		**+ Industry**		**All**	
	Coef. (SE)	Sign.	Coef. (SE)	Sign.	Coef. (SE)	Sign.	Coef. (SE)	Sign.
Panel A (Table A5a). Dependent variable: Night work (= 1 if working more than 8 hours per day), 0.345 on average.								
Firm type:								
State owned Enterprise			0.012 (0.012)				0.010 (0.012)	
Private owned Enterprise			0.076 (0.011)	***			0.072 (0.011)	***
Foreign funded Enterprise			0.032 (0.024)				0.029 (0.024)	
Other			0.046 (0.014)	***			0.042 (0.014)	**
Joint Wald $\chi^2(4)$ *(Firm type)*			54.405	***			46.367	***
Industries:								
Mining & Manufacturing					0.018 (0.023)		0.016 (0.023)	
Construction					0.087 (0.025)	***	0.081 (0.024)	***
Electricity/Heat/Gas/Water					0.000 (0.027)		0.002 (0.027)	
Wholesale & Retail					0.022 (0.025)		0.016 (0.024)	
Transport & Postal					0.039 (0.026)		0.039 (0.026)	
Hospitality & Food service					0.057 (0.028)	*	0.051 (0.028)	.
IT & Software					-0.003 (0.033)		-0.002 (0.033)	
Finance					0.025 (0.029)		0.029 (0.029)	
Real Estate					0.039 (0.034)		0.035 (0.034)	
Science/Education/Culture/Health					0.008 (0.024)		0.016 (0.024)	
Domestic/Residential/Other services					0.023 (0.022)		0.023 (0.022)	
Public admin. & social org.					-0.008 (0.022)		0.001 (0.022)	
Other					0.016 (0.023)		0.020 (0.023)	
Joint Wald $\chi^2(13)$ *(Industry)*					39.141	***	30.382	**
Age (ref.: 18–24):								
Age 25–34	-0.000 (0.025)		-0.003 (0.025)		-0.001 (0.024)		-0.003 (0.024)	
Age 35–44	-0.015 (0.028)		-0.012 (0.028)		0.014 (0.028)		0.011 (0.028)	
Age 45–54	-0.001 (0.031)		-0.004 (0.031)		-0.003 (0.031)		-0.005 (0.031)	
Age 55+	-0.019 (0.035)		-0.020 (0.035)		-0.020 (0.035)		-0.021 (0.035)	
Joint Wald $\chi^2(4)$ *(Age)*	5.544		5.046		5.436		5.034	
Education (ref.: Compulsory):								
Secondary	-0.048 (0.017)	**	-0.046 (0.017)	**	-0.047 (0.017)	**	-0.045 (0.017)	**
Higher	-0.027 (0.022)		-0.022 (0.022)		-0.024 (0.022)		-0.020 (0.022)	
Joint Wald $\chi^2(2)$ *(Education)*	10.022	**	9.504	**	9.758	**	9.338	**
Survey year (ref.: 2011):								
Year 2013	0.013 (0.010)		0.013 (0.010)		0.013 (0.010)		0.013 (0.010)	
Year 2015	-0.001 (0.011)		-0.002 (0.011)		-0.002 (0.011)		-0.003 (0.011)	
Year 2017	-0.009 (0.012)		-0.011 (0.012)		-0.008 (0.012)		-0.010 (0.012)	
Year 2019	-0.001 (0.013)		-0.001 (0.013)		-0.001 (0.013)		-0.001 (0.013)	
Joint Wald $\chi^2(4)$ *(Year)*	11.704	*	13.785	**	11.478	*	13.523	**
Diagnostics								
Within R^2	0.002		0.004		0.004		0.006	
N	75964		75964		75964		75964	
Model F	3.307	***	6.794	***	3.349	***	4.792	***
Panel B (Table A5b). Dependent variable: Weekend work (= 1 if work more than 5 days per week), 0.527 on average.								

Continued on next page

Table A5 (continued)

	Base		+ Firm type		+ Industry		All	
	Coef. (SE)	Sign.	Coef. (SE)	Sign.	Coef. (SE)	Sign.	Coef. (SE)	Sign.
Firm type:								
State owned Enterprise			0.039 (0.013)	**			0.034 (0.013)	**
Private owned Enterprise			0.123 (0.013)	***			0.112 (0.013)	***
Foreign funded Enterprise			0.058 (0.024)	*			0.048 (0.024)	*
Other			0.075 (0.016)	***			0.070 (0.016)	***
Joint Wald $\chi^2(4)$ *(Firm type)*			106.841	***			89.977	***
Industries:								
Mining & Manufacturing					-0.003 (0.024)		-0.007 (0.024)	
Construction					-0.038 (0.027)		-0.046 (0.027)	.
Electricity/Heat/Gas/Water					-0.060 (0.028)	*	-0.057 (0.028)	*
Wholesale & Retail					0.038 (0.026)		0.030 (0.026)	
Transport & Postal					0.000 (0.021)		-0.002 (0.027)	
Hospitality & Food service					0.057 (0.028)	*	0.047 (0.028)	.
IT & Software					-0.027 (0.033)		-0.028 (0.032)	
Finance					-0.073 (0.033)	*	-0.069 (0.033)	*
Real Estate					0.049 (0.036)		0.043 (0.036)	
Science/Education/Culture/Health					0.067 (0.026)	**	-0.054 (0.025)	*
Domestic/Residential/Other services					0.012 (0.024)		-0.012 (0.024)	
Public admin. & social org.					-0.058 (0.025)	*	-0.044 (0.024)	.
Other					-0.028 (0.025)		-0.021 (0.024)	
Joint Wald $\chi^2(13)$ *(Industry)*					76.075	***	56.248	***
Age (ref.: 18–24):								
Age 25–34	-0.020 (0.025)		-0.023 (0.025)		-0.019 (0.025)		-0.022 (0.025)	
Age 35–44	-0.005 (0.029)		-0.009 (0.029)		-0.004 (0.029)		-0.008 (0.029)	
Age 45–54	-0.012 (0.032)		-0.017 (0.032)		-0.012 (0.032)		-0.015 (0.032)	
Age 55+	-0.046 (0.037)		-0.049 (0.037)		-0.045 (0.037)		-0.047 (0.037)	
Joint Wald $\chi^2(4)$ *(Age)*	7.303		6.764		6.849		6.451	
Education (ref.: Compulsory):								
Secondary	-0.021 (0.016)		-0.016 (0.016)		-0.019 (0.016)		-0.015 (0.016)	
Higher	-0.083 (0.024)	***	-0.074 (0.024)	**	-0.077 (0.024)	**	-0.071 (0.024)	**
Joint Wald $\chi^2(2)$ *(Education)*	13.581	**	11.749	**	11.911	**	10.631	**
Survey year (ref.: 2011):								
Year 2013	0.013 (0.011)		0.013 (0.011)		0.013 (0.011)		0.013 (0.011)	
Year 2015	0.022 (0.012)	.	0.021 (0.012)	.	0.022 (0.012)	.	0.020 (0.012)	.
Year 2017	0.011 (0.012)		0.007 (0.012)		0.012 (0.012)		0.008 (0.012)	
Year 2019	0.021 (0.014)		0.020 (0.014)		0.022 (0.014)		0.021 (0.014)	
Joint Wald $\chi^2(4)$ *(Year)*	8.369	.	10.052	*	7.204		8.806	.
Diagnostics								
Within R^2	0.001		0.008		0.006		0.011	
N	75,964		75,964		75,964		75,964	
Model F	3.064	***	11.963	***	2.251	***	8.633	***

Source: China Household Finance Survey (CHFS).
Period: Employees living with a partner, 2011, 2013, 2017, and 2019.
Clustered Standard Errors: The standard errors are clustered at the individual level.
Sign. level: . represents statistically significantly different from zero at the .10 level, * at the .05 level, ** at the .01 level, *** at the .001 level.
Estimation methods: All regressions are estimated using the fixed effect approach, which the Hausman test prefers.
Notes: The first sub-panel shows the results for the regression of working days per week (0–7). The second sub-panel shows the results for the regression of working hours per day. All independent variables are indicator variables. The reference categories are *Age from 18–24*, *Compulsory Education*, *Year 2011*, *Civil Servant*, and *Agriculture, Forestry, Animal husbandry and Fishery* corresponding to the *Self-reported*, *Age*, *Education levels*, *Year*, *Types of firms*, and *Industries*. The first column (1) only includes demographic variables, the second column (2) adds *Types of firms*, the third column (3) adds *Industries*, and the last column (4) includes all variables of interest.

Table A6: Fixed-effects estimates of working days and weekend work

Dependent variable	Working days			Weekend work		
Variable	**Estimate**	**Std. Error**	**Sig.**	**Estimate**	**Std. Error**	**Sig.**
Controls:						
Working hours per day	0.007	0.005		0.008	0.002	***
Industry (ref.: Agriculture, Forestry, Animal Husbandry and Fishery)						
Mining & Manufacturing	-0.034	0.059		-0.009	0.024	
Construction	-0.124	0.065	.	-0.048	0.027	.
Electricity, heat, gas & water	-0.090	0.068		-0.058	0.028	*
Wholesale & retail	0.058	0.064		0.029	0.026	
Transport, storage & postal	-0.002	0.064		-0.004	0.027	
Hospitality & food service	0.149	0.070	*	0.046	0.028	
Information, computer services & software	-0.016	0.072		-0.029	0.032	
Finance	-0.123	0.070	.	-0.069	0.033	*
Real Estate	0.047	0.086		0.043	0.036	
Science, Education, Culture & Health	-0.117	0.060	.	-0.055	0.025	*
Domestic/Residential/Other services	-0.017	0.058		-0.014	0.024	
Public administration & social organization	-0.078	0.058		-0.045	0.024	.
Other	0.079	0.060		-0.024	0.024	
Joint Wald test	$\chi^2(13) = 54.349$		***	$\chi^2(13) = 55.909$		***
Firm type (ref.: Civil servant)						
State-owned Enterprise	0.017	0.028		0.034	0.013	**
Private-owned Enterprise	0.178	0.028	***	0.110	0.013	***
Foreign-funded Enterprise	0.062	0.047		0.048	0.024	*
Other	0.084	0.036	*	0.069	0.016	***
Joint Wald test	$\chi^2(4) = 55.800$		***	$\chi^2(4) = 87.180$		***
Age (ref.: 18–24)						
25–34	-0.017	0.048		-0.023	0.025	
35–44	0.022	0.057		-0.010	0.029	
45–54	-0.007	0.065		-0.016	0.032	
55+	-0.081	0.078		-0.048	0.037	
Joint Wald test	$\chi^2(4) = 8.062$		.	$\chi^2(4) = 6.631$		
Education (ref.: Compulsory)						
Secondary	-0.022	0.037		-0.014	0.016	
Higher	-0.116	0.050	*	-0.071	0.024	**
Joint Wald test	$\chi^2(2) = 7.868$		*	$\chi^2(2) = 10.831$		**
Year (ref.: 2011)						
2013	0.012	0.023		0.014	0.011	
2015	0.017	0.025		0.020	0.012	.
2017	-0.034	0.027		0.008	0.012	
2019	-0.019	0.030		0.020	0.014	
Joint Wald test	$\chi^2(4) = 15.930$		**	$\chi^2(4) = 8.274$		.
Diagnostics						
Within R^2	0.009			0.012		
Observations	75,964			75,964		
F-statistic	6.992		***	9.490		***

Period: 2011, 2013, 2017, 2019, with 75,964 observations in total.
Notes: All of the independent variables are indicator variables. The reference categories are *Compulsory Education*,*Civil Servant*, and *Agriculture, Forestry, Animal, husbandry and Fishery* corresponding to the *Education*, *Types of firms*, *Industries*. Due to the space constraints, *Age*, *Education*, and *Year* are also included as RHS variables, but are not listed here.

[a] Clustered Standard Errors: The standard errors are clustered at the individual level.

[b] Estimation methods: All regressions are estimated using the fixed effect approach, which the Hausman test prefers.

[*] . represents statistically significantly different from zero at the .10 level, * at the .05 level, ** at the .01 level, *** at the .001 level.

Table A7: Mapping of theoretical notation to empirical definitions and computation

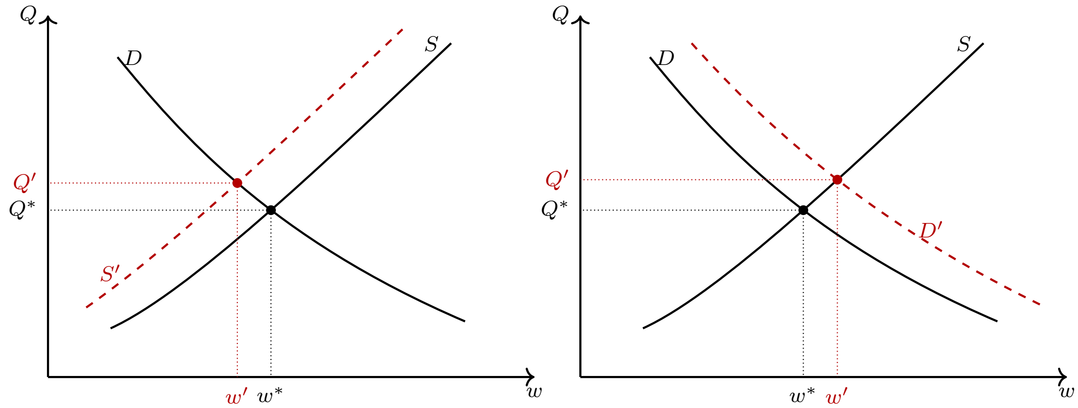
Theoretical notation	**Empirical definition**	**Structure**	**Computation / formula**
$\tau \in (0,1)$	Population share of *weekend/night-tolerant workers* (Type t workers).	Structural (latent)	Not directly observed; treat as structural parameter unless a proxy is introduced.
$\iota \in (0,1)$	Share of *weekend/night-intensive firms* (Type t firms)	Structural (latent)	Not directly observed; treat as structural parameter unless a proxy is introduced.
$w > 1$	Relative wage for weekend/night works (five-day work normalized to 1), also referred to as weekend/night wage premium.		$\frac{\overline{\text{Wage}}_{\text{weekend/night work}_{p,t}}}{\overline{\text{Wage}}_{\text{non-weekend/night work}_{p,t}}}$
$Q(\tau,\iota)$	Equilibrium share of weekend/night works in a market, namely, the proportion of weekend/night works offered in total.	Area: $\frac{1+3}{1+2+3+4}$	$\frac{N_{\text{weekend/night works}_{p,t}}}{N_{\text{works}_{p,t}}}$
$S(\tau,\iota)$	Aggregate supply of weekend/night work (model object); equals Q in equilibrium.	Same as $P(\alpha,\beta)$	Observed counterpart in equilibrium: $S(\tau,\iota) = Q \Rightarrow Q_{p,t}$.
$D(\tau,\iota)$	Aggregate demand for weekend/night work (model object); equals P in equilibrium.	Same as $P(\alpha,\beta)$	Observed counterpart in equilibrium: $D(\tau,\iota) = Q \Rightarrow Q_{p,t}$.
$\phi_t^D(\tau,\iota)$	Share of weekend/night works provided by weekend/night-intensive (Type 1) industries/firms.	Area: $\frac{1}{1+3}$	$\frac{N^{\text{weekend/night work}}_{\text{workers employed by weekend/night-intensive firms}_{p,t}}}{N^{\text{weekend/night work}}_{\text{workers}_{p,t}}}$
$\phi_a^D(\tau,\iota)$	Share of weekend/night works provided by weekend/night-averse (Type 2) industries/firms.	Area: $\frac{3}{1+3}$	$\frac{N^{\text{non-weekend/night work}}_{\text{workers employed by weekend/night-averse firms}_{p,t}}}{N^{\text{non-weekend/night work}}_{\text{workers}_{p,t}}}$

Notes: p indexes provinces and t indexes survey year. $N_{p,t}$ corresponds to the number of samples in CHFS after sample restrictions for a certain year and province. $\overline{\text{Wage}}$ represents the average wage. α, is latent and should be labeled as such if not separately identified. **Structure** provides empirical interpretation of these variables in terms of Figure 1.

Table A8: Weekend- and Night-Intensive/Averse Industries

	Weekend-intensive		Night-intensive		Weekend-averse		Night-averse	
	Industry	**Share**	**Industry**	**Share**	**Industry**	**Share**	**Industry**	**Share**
1	Hospitality and food service	0.770	Construction	0.567	Finance	0.206	Public administration and social organization	0.154
2	Wholesale and retail	0.714	Hospitality and food service	0.500	Public administration and social organization	0.251	Finance	0.184
3	Construction	0.631	Transport, storage, and postal services	0.393	Science, Education, Culture, and Health	0.300	Science, Education, Culture, and Health	0.208
4	Mining and Manufacturing	0.622	Mining and Manufacturing	0.367	Information transmission, computer services, and software industry	0.301	Information transmission, computer services, and software industry	0.235
5	Agriculture, Forestry, Animal Husbandry, and Fishery	0.544	Wholesale and retail	0.366	Electricity, heat, gas, and water production and supply	0.383	Electricity, heat, gas, and water production and supply	0.238
6	Real Estate	0.527	Agriculture, Forestry, Animal Husbandry, and Fishery	0.341	Other	0.434	Real Estate	0.284
7	Domestic Residential services and other services	0.521	Domestic Residential services and other services	0.307	Transport, storage, and postal services	0.463	Other	0.302

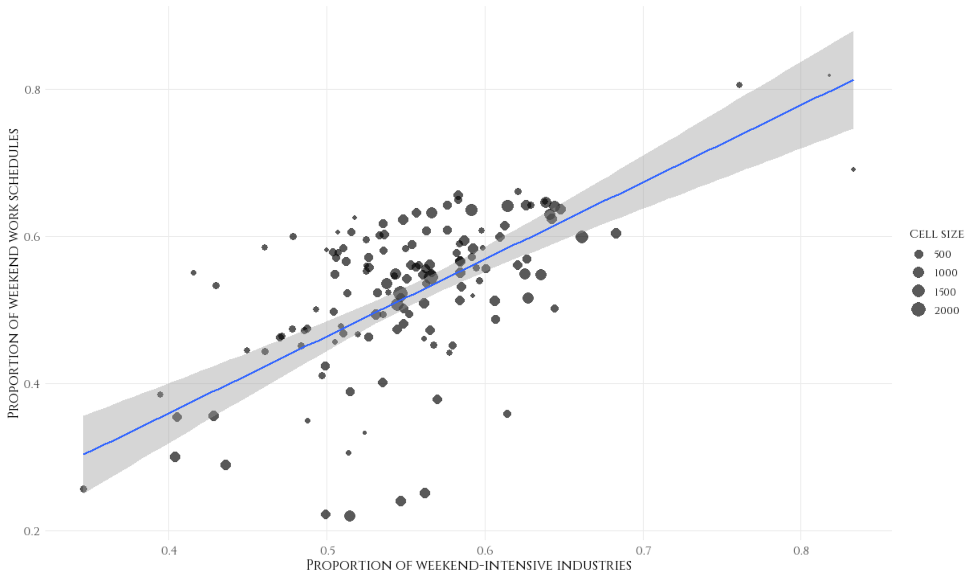
Notes: "Share" is the national fraction of employees in the corresponding industry who work on weekends (working more than 5 days per week) or work long daily hours (working more than 8 hours per day), computed using the pooled pre-period waves 2011 and 2013. Weekend- (night-) intensive industries are the seven industries with the highest pre-period share, while weekend- (night-) averse industries are the seven industries with the lowest pre-period share. This industry classification is held fixed and used throughout the analysis for all waves (2011–2019) when constructing the province-year decomposition measures, so that "intensive" status is predetermined with respect to subsequent province-year variation. Because the CHFS does not record clock time, "night work" is used as shorthand for long daily hours rather than direct evidence on evening or night timing.



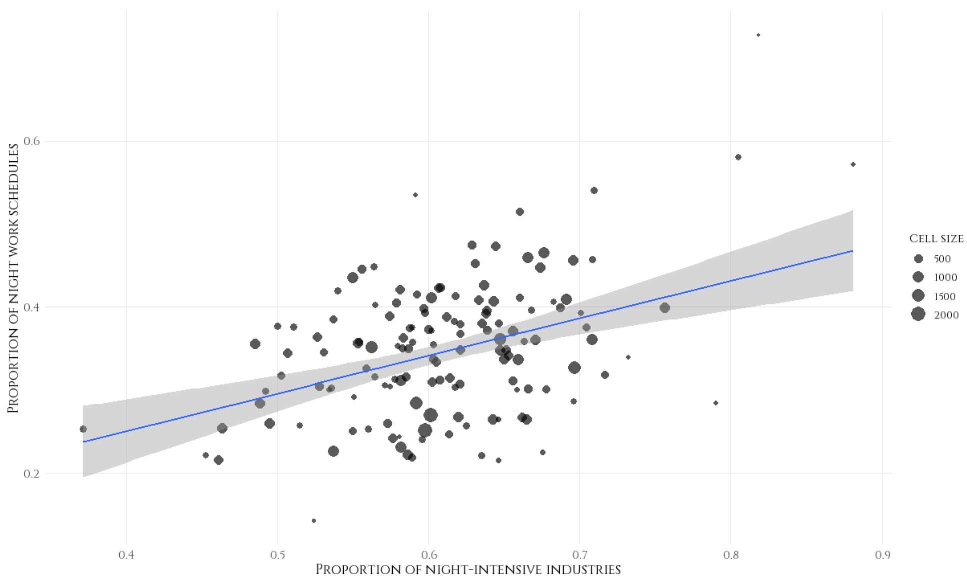
(a) Supply shift through τ (b) Demand shift through ι

Figure A1. : Equilibrium with supply and demand shifts.

Figure A2. : LOPO robustness, Shifts of weekend/night-work incidence ($Q_{p,t}$) with respect to intensive-industry exposure ($\phi^D_{p,t}$)



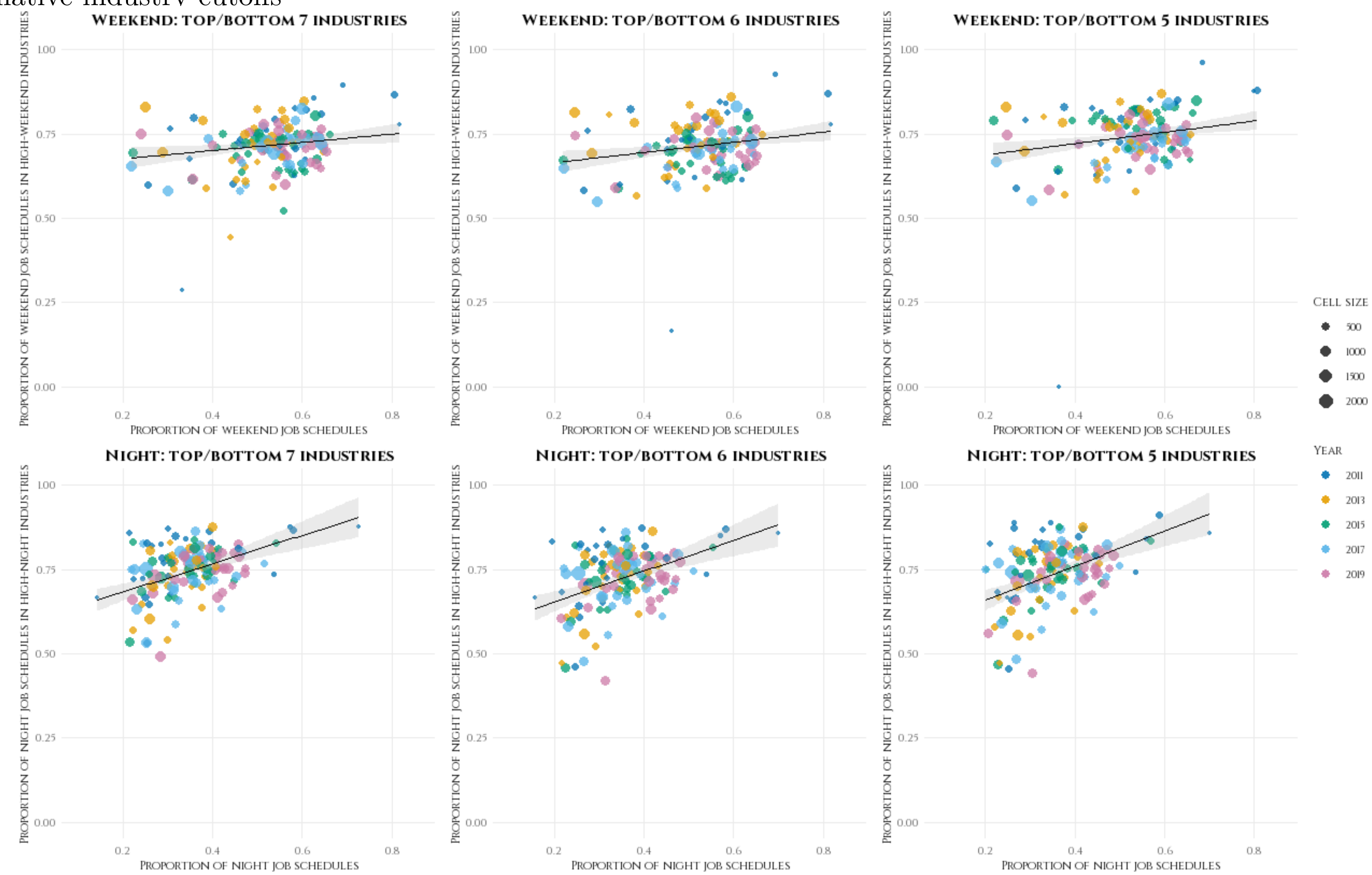
(a) For weekend work.



(b) For night work.

Source: China Household Financial Survey (CHFS) from 2011, 2013, 2015, 2017, and 2019. Each point is a province-year cell. The regression sample includes 29 provinces and 140 province-year cells.
Note: This figure reports a leave-one-province-out (LOPO) robustness check for the relationship between local weekend/night-work incidence and exposure to weekend/night-intensive industries. For each province p, industries are ranked using only the 2011–2013 national pre-period incidence of weekend/night work after excluding province p. The resulting province-specific industry classification is then kept fixed and applied to all years when constructing $\phi^D_{p,t}$. The horizontal axis is the share of employment in weekend/night-intensive industries, $\phi^D_{p,t}$, and the vertical axis is the overall share of weekend/night work schedules, $Q_{p,t}$.
Regression: The fitted lines correspond to weighted province-year regressions of $Q_{p,t}$ on $\phi^D_{p,t}$, with weights equal to province-year cell size, province and year fixed effects, and standard errors clustered at the province level. The estimated coefficient is 0.498 (SE = 0.135) for weekend work and 0.416 (SE = 0.135) for night work; standard errors are clustered at the province level. Both estimates remain positive, consistent with the demand-side interpretation that provinces with greater exposure to weekend/night-intensive industries have a higher incidence of weekend/night work.

Figure A3. : Robustness of the relationship between schedule incidence and concentration in intensive industries under alternative industry cutoffs



Source: China Household Financial Survey (CHFS), 2011, 2013, 2015, 2017, and 2019, covering 29 provinces. The plotted regression sample contains 140 province-year cells. *Note:* Each point represents a province-year observation. The top row reports weekend work and the bottom row reports long daily hours. Columns use alternative industry classifications based on the top/bottom 7, 6, or 5 industries ranked by the corresponding work-schedule share. In each panel, the horizontal axis is the province-year incidence of weekend work or long daily hours, $Q_{p,t}$, and the vertical axis is the share of those schedules located in high-weekend or high-night industries, $\phi^D_{p,t}$. Marker size is proportional to the province-year cell size, and colors denote survey years. The fitted line is estimated by weighted least squares, with weights equal to province-year cell size; shaded areas report the 95% confidence band around the fitted mean. Weekend work is defined as working more than five days per week. Long daily hours are defined as working more than eight hours per day. *Regression:* The weighted fitted-line estimates are positive across all alternative classifications. For weekend work, the estimated coefficients on $Q_{p,t}$ are 0.121 (SE = 0.048), 0.151 (SE = 0.048), and 0.167 (SE = 0.049) for the top/bottom 7, 6, and 5 classifications, respectively. For long daily hours, the corresponding estimates are 0.421 (SE = 0.078), 0.453 (SE = 0.091), and 0.514 (SE = 0.090). All estimates are statistically significant at least at the 5% level with standard errors clustered at the province level.

Proofs

B1. Proposition 1

Since we are focusing on comparative statics. The relevant partial derivatives of H are as follows, which refer to H in (10), and allow for excess demand/excess supply.

$$H_\tau = \tfrac{\partial H}{\partial \tau} = F_t(w^*) - F_a(w^*) > 0,$$
$$H_\iota = \tfrac{\partial H}{\partial \iota} = -[1 - G_t(w^*)] + [1 - G_a(w^*)] = G_t(w^*) - G_a(w^*) < 0,$$
$$H_w = \tfrac{\partial H}{\partial w} = \tau F_t(w) + (1-\tau)F_a(w) + \iota g_t(w) + (1-\iota)g_2(w) > 0$$

where the sign restrictions follow from first-order stochastic dominance and the assumption that weekend/night-intensive firms are more likely than weekend/night-averse firms to offer weekend/night work at any given wage level, w.

Applying the implicit function theorem gives the comparative statics of the equilibrium weekend wage with respect to worker and employer composition:

$$\text{(B1)} \qquad \frac{\partial w}{\partial \tau} = -\frac{H_\tau}{H_w} = -\frac{F_t(w) - F_a(w)}{\tau F_t(w) + (1-\tau)F_a(w) + \iota g_t(w) + (1-\iota)g_2(w)} < 0,$$

$$\text{(B2)} \qquad \frac{\partial w}{\partial \iota} = -\frac{H_\iota}{H_w} = -\frac{G_t(w) - G_a(w)}{\tau F_t(w) + (1-\tau)F_a(w) + \iota g_t(w) + (1-\iota)g_2(w)} > 0.$$

Aware that we normalize the wage for standard 5-day work as 1, an increase in the share of weekend/night-tolerant workers τ decreases the relative wage of weekend/night work, shrinking the weekend wage premium $w-1$. By contrast, an increase in the share of weekend/night-intensive employers ι increases the relative wage of weekend/night work and increases the weekend premium.

Hence, to study how the equilibrium amount of weekend/night work responds to changes in worker and employer composition, we differentiate Q with respect to τ and ι along the corresponding equilibrium paths:

$$\text{(B3)} \qquad \frac{\partial Q}{\partial \tau} = \frac{\partial D}{\partial \tau} = D_w \frac{\partial w^*}{\partial \tau} = -\left[\iota g_t(w^*) + (1-\iota)g_2(w^*)\right]\frac{\partial w^*}{\partial \tau} > 0,$$

$$\text{(B4)} \qquad \frac{\partial Q}{\partial \iota} = \frac{\partial S}{\partial \iota} = S_w \frac{\partial w^*}{\partial \iota} = \left[\tau F_t(w^*) + (1-\tau)F_a(w^*)\right]\frac{\partial w^*}{\partial \iota} > 0.$$

Hence Proposition 1.

B2. Proposition 2

To explore how the share of weekend/night work provided by weekend/night-intensive firms changes as demand/supply shifts, we start by exploring the impact caused by ι, assuming τ as fixed. Therefore, the derivative of (7) with respect to ι can be derived as

(B5)
$$\frac{d\phi_t^D(w,\iota)}{d\iota} = \frac{[1-G_t(w)][1-G_a(w)] + \iota(1-\iota)\,\frac{dw}{d\iota}\left[g_2(w)[1-G_t(w)] - g_t(w)[1-G_a(w)]\right]}{\left[\iota G_t(w) + (1-\iota)G_a(w)\right]^2}$$

Since the first term ($G_t(w)G_a(w) > 0$) is strictly positive and the second term in the numerator of (B5) is non-negative ($g_t(w)G_a(w) - G_t(w)g_2(w) \geq 0$ due to our assumption of less elasticity of wage for Type t firms as stated in (6). Hence,

$$\frac{d\phi_t^D(w,\iota)}{d\iota} > 0 \tag{B6}$$

This means the share of weekend/night work provided by weekend/night-intensive industries strictly increases as the share of weekend/night-intensive firms (ι) increases. An analogous calculation for $\phi_a^F(w,\iota)$ in (8) yields

$$\frac{d\phi_a^D(w,\iota)}{d\iota} < 0$$

so that the share of weekend/night work provided by weekend/night-averse industries strictly decreases as the share of weekend/night-intensive firms (ι) increases. If we consider the same allocation question along a shift in supply caused by changes in τ, holding ι fixed, we then focus on

$$\frac{d\phi_t^D(w,\iota)}{d\tau} = \frac{\iota(1-\iota)\frac{dw}{d\tau}\left[g_2(w)(1-G_t(w)) - g_t(w)(1-G_a(w))\right]}{\left[\iota(1-G_t(w)) + (1-\iota)(1-G_a(w))\right]^2}. \tag{B7}$$

Same as (B5), $g_2(w)(1-G_t(w)) - g_t(w)(1-G_a(w)) \geq 0$ due to the elasticity we assumed for two types of firms. However, since $\frac{dw}{d\tau} < 0$, namely, the wage in the equilibrium decreases as the share of weekend/night-tolerant workers increases. It follows from (B7) that

$$\frac{d\phi_t^D(w,\iota)}{d\tau} \leq 0, \tag{B8}$$

with strict inequality except in the special case where the hazard-rate ranking is binding. Equivalently, since $\phi_a^F(w,\iota) = 1 - \phi_t^D(w,\iota)$, we have

$$\frac{d\phi_a^D(w,\iota)}{d\tau} \geq 0 \tag{B9}$$

Hence Proposition 2.