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Nightless City: Impacts of Politicians' Questions on Overtime Work of Bureaucrats

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Abstract

We quantify the impact of unexpectedly assigned tasks on overtime work in the context of Japanese government officials. Data on overtime work are typically not reliable. We overcome this problem by using mobile phone location data, which enables us to precisely measure the nighttime population in the government office district in Tokyo at an hourly frequency. Exploiting the exogenous nature of task arrivals, we estimate dynamic responses of overtime work. We find that, in response to an unexpected task, overtime work initially decreases and then increases persistently. Institutional changes, such as relaxing time constraints and adopting a paperless system, were intended to mitigate overtime work. However, our findings suggest that these changes had limited success in reducing overtime or improving the quality of work, as evidenced by our survey experiment. We provide a simple model of optimal work allocation and show that distortion in intertemporal task allocation can account for the observed responses.

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Abstract

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JEL Classification: C22, H11, J22
Keywords: mobile location data; overtime work; local projection; government officials

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1 Introduction

Preventing long working hours is one of the important issues in labor laws and economics. Overtime work often results in various types of adverse outcomes on labor productivity, workers' health and safety, work-life balance, and welfare in general. Although we recognize the importance of analyzing overtime work, rigorous empirical analysis is difficult due to the nature of overtime work and the lack of high-quality data—overtime work is likely to be underreported because of unpaid overtime work. In addition, firms strategically use managerial titles to avoid compensation for overtime work, which makes the measurement of overtime work even more challenging.[1] Since it is likely that overtime work is underreported, we need a way to measure actual hours of overtime work. Furthermore, additional complications arise because regulations for overtime work, the working environment, and culture vary significantly across countries, which changes firms' behaviors.

To overcome this challenge, we utilize mobile location data to analyze overtime work. There are several advantages to using mobile location data. First, mobile location data reflect the physical presence of individuals, regardless of whether they are managerial or non-managerial workers. Given the widespread ownership of mobile phones (not necessarily smartphones), our dataset provides a more reliable measure of actual hours of physical presence. Second, mobile location data are recorded every hour, which enables us to illustrate the high-frequency dynamics of overtime work in response to an increase in tasks. Third, mobile location data are associated with individual characteristics, such as gender and age groups, which enables us to estimate dynamic responses across different subgroups.

In this paper, we focus on the overtime work of Japanese government officials for the following two reasons. First, there is a close correspondence between the overtime work of Japanese government officials and the nighttime population measured by mobile location data. Japan's central administrations are concentrated in a relatively small district (approximately one square kilometer) in Tokyo called Kasumigaseki. As Kasumigaseki is almost exclusively occupied by central government administrations and other public organizations, changes in the nighttime population in Kasumigaseki are likely to be associated with changes in their overtime work. Second, exogenous shocks that only affect overtime work of government officials are available. This is important. Although the geographical setup enables us to infer something about overtime work, we cannot say something definitive. It is because the data also include ordinary people, such as taxi drivers and people working in restaurants and stores. We need exogenous shocks that only affect government officials.

[1] Firms can be exempt from overtime payment if the employee is a manager and receives a salary above the overtime exemption threshold set by law. Cohen, Gurun, and Ozel (2023) find that there are disproportionally many uses of managerial titles around the federal regulatory threshold, suggesting firms' intention to avoid paying overtime in the US.

To quantify the overtime work of government officials, we focus on a specific task of responding to a "memorandum on questions" (MOQ, hereafter). MOQ are written questions submitted by members of the Diet (legislative body) to the Cabinet (executive body) and have several unique features that we exploit for identification. First, the MOQ imposes a significant burden on government officials who are already working at their margins, and its arrival likely triggers overtime work. The law requires the Cabinet to respond to a MOQ within one week, which sets a tight deadline. In addition, the response to a MOQ needs to be approved at the highest level of a Cabinet meeting by ministers, which requires numerous internal administrative processes and imposes a significant administrative burden. Second, it is impossible for individual government officials to anticipate the tasks associated with MOQs in advance because members of the Diet have discretion over the timing and content of an MOQ. Members of the Diet can submit the MOQ at any time regarding any subject during sessions of the Diet. Because both the timing and contents of the questions are unpredictable, it is extremely difficult for government officials to foresee the tasks in advance. Furthermore, the oral sessions of the Diet cover controversial topics because of better media exposure and the opportunity for immediate responses; this makes the content of MOQs even more unpredictable. Due to these features, the MOQ can be regarded as exogenous for individual government officials, which we exploit for identification. We also assume that no other systematic shock occurs when the MOQs are submitted to the Cabinet, which enables us to identify their impact using high-frequency data. Exploiting the statutory deadline of the MOQ, we focus on hourly changes in Kasumigaseki's population, using the local projection proposed by Jordá (2005).

Our setup is an ideal environment to study overtime work, in which tens of thousands of homogeneous workers face exogenous shocks. The number of government officials working in Kasumiaseki is sizable. Before the COVID pandemic, we observe more than 80,000 people in Kasumigaseki on weekdays. They follow the same set of explicitly stipulated regulations. Workers are fairly homogeneous in the sense that they have passed national civil service examinations and share a similar corporate culture. They are physically concentrated in a small area and are exclusively dedicated to the same industry.

We find that, on average, an increase in the submission of MOQs significantly *decreases* the overtime work of government officials one day after the MOQ shock, and *increases* overtime work six to eight working days after the shock. For example, the nighttime population of Kasumigaseki one day after the shock decreases up to 0.4 percent between 6 pm and 4 am the next day, but increase up to 0.4 percent between 6 pm and 2 am for eight days after the shock. These increases in overtime work typically extend beyond the MOQ deadline, suggesting that preparing for MOQs has a negative spillover effect on government officials' workload. The results also suggest that the effects of MOQs are heterogeneous across demographic groups. The estimated gender-age-specific responses suggest that male government officials, especially those in their 30s, 40s, and

50s, are more severely affected by MOQ shocks. Institutional changes that relax time constraints mitigate overtime to some extent. However, we still observe a negative spillover effect beyond the MOQ deadline.

A noticeable feature of our empirical results is that the MOQ shock initially decreases overtime work. This seems puzzling, given the tight time constraints that government officials face. To understand the underlying mechanism, we present a simple model of dynamic work allocation. Our analysis suggests that distortion in the intertemporal allocation of work hours can account for observed patterns in overtime work. With standard preferences, workers optimally smooth their working hours over time. However, the presence of irregular tasks, such as MOQs, distorts the intertemporal allocation of working hours. Instead of smoothing working hours, workers choose to return home early in the initial period to prepare for intensive work in the future periods. This yields a suboptimal allocation. We extend our simple model further to an infinite-horizon setting, replicating the observed pattern of overtime work quantitatively.

This finding has important policy implications. It is well known that longer working hours have many adverse effects—lower labor productivity, higher probability of human errors, and deteriorating mental and physical health (e.g., Pencavel, 2015; Hamermesh, Kawaguchi, and Lee, 2017; Sato, Kuroda, and Owan, 2020). Although we cannot directly associate our analysis of the nighttime population with health outcomes, the significant increase in the nighttime population suggests that non-monetary costs associated with the MOQ are substantial. While the MOQ plays an important role in increasing the transparency of Japan's government, politicians should recognize its costs and refrain from abusive use of the MOQs.

The contributions of our study are twofold. First, our study is one of the first studies to quantify the high-frequency dynamics of overtime work, which complements the literature on overtime work. Existing studies in the literature typically use the reported data and focus on the economic outcome of overtime work, such as compensation, employment, and welfare.[2] Our results provide quantitative estimates of overtime work based on physical presence and suggest that it is important to consider the dynamic allocation of working hours to understand the mechanisms of overtime work. Second, this study contributes to the expanding body of literature that uses mobile location data for economic analysis. After the COVID-19, many studies use mobile location data to analyze the impact of public health measures, such as social distancing and lockdowns, and their relationship with risk perceptions and political attitudes.[3] This paper contributes to a series of papers to expand the usage of mobile location data to address not only public health questions but also broader economic questions.[4]

[2] Quach (2024) estimates the impact of expanding overtime coverage by using monthly administrative payroll data and finds that exogenous increases in the overtime exemption threshold decrease employment and increase earnings. See also Anxo and Karlsson (2019), Barkume (2010), Bell and Hart (2003), Kuroda and Yamamoto (2012), and Trejo (1991), among others.

[3] See Alexander and Karger (2021), Barrios and Hochberg (2020), Chen and Pope (2020), Couture, Dingel, Green, Handbury, and Williams (2021), for the analysis in the US, Mizuno, Ohnishi, and Watanabe (2021) and Watanabe and Yabu (2021a,b) for Japan, and Fang, Wang, and Yang (2020) for China.

[4] For example, Athey, Ferguson, Gentzkow, and Schmidt (2020) construct a measure of segregation using the Global Posi-

The rest of the paper is organized as follows. Section 2 explains the institutional background relevant to our study. Section 3 details our dataset. Section 4 explains our empirical model and Section 5 presents the results. Section 6 presents a simple theoretical model that can account for the observed responses. Section 7 explains our survey experiment that examines changes in the quality of work done by government officials. Finally, Section 8 concludes.

2 Institutional Background

This section provides the institutional background about the MOQ system in the Japanese National Diet and its implications for government officials' overtime work. We first describe the MOQ system and explain the timeline of the MOQ before and after 2018. Then, we briefly discuss the contents of the MOQ and its implications for government official's overtime work.

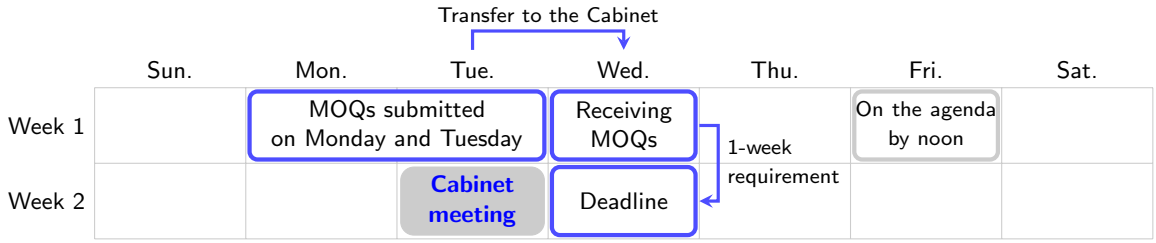
2.1 Philosophy of the MOQ

An MOQ is a written question submitted by a member of the Diet.A member of the Diet has a right to submit an MOQ to the Cabinet through the Speakers of the Houses. In principle, the members of the Diet can ask oral questions during the plenary and committee sessions. Since oral questions attract considerable attention from the media with the members' visual appearance, members tend to prefer oral questions. However, the content of oral questions is subject to the agenda of the sessions. Also, the allocation of time for oral questions to each political party is proportional to the number of seats that political parties have in each House. Therefore, members of small parties or members who do not belong to any party may not be able to secure sufficient time for oral questions.

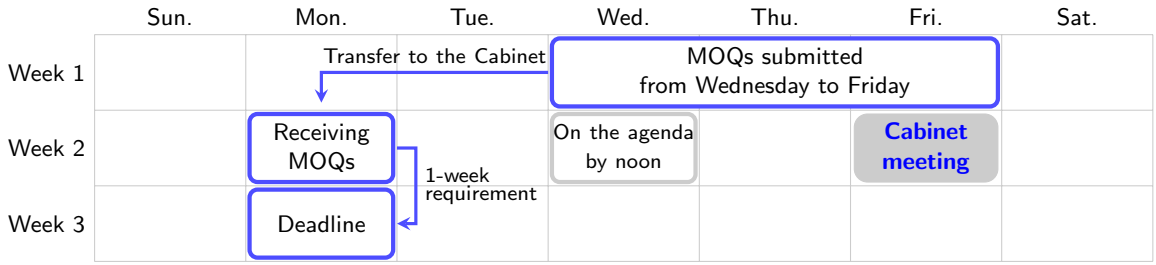
The MOQ is designed to mitigate this issue. The MOQ allows members of the Diet to request the Cabinet's views on general matters. Any member of the Diet can submit the MOQ. A member of the Diet can submit the MOQs on any business day during the sessions of the Diet. Furthermore, there are no restrictions on the number of MOQs to submit. Due to this feature, the MOQ is typically used by the members of the Diet in the opposing political parties and is regarded as an important mechanism to ensure fair democracy in Japan.[5]

tioning System (GPS) signals, which captures individuals' exposure to different groups of people. Miyauchi, Nakajima, and Redding (2021) measure commuting and non-commuting consumption trips using mobile location data to build a quantitative urban model. Matsumura, Oh, Sugo, and Takahashi (2021) use GPS mobility data to measure economic activity in real-time, which significantly outperforms the prediction based on conventional datasets.

[5]For example, There were several cases where the MOQ revealed hidden information from the government, including evidence of the government's inadequate handling of blood contaminated by HIV, in which officials in the Ministry of Health and Labor were charged with involuntary manslaughter. For details, see Tanaka (2008).



(a) MOQs submitted on Monday or Tuesday



(b) MOQs submitted from Wednesday to Friday

Figure 1: Timeline of Handling MOQs: Prior to 2018

2.2 Timeline of MOQ before 2018

This subsection explains the timeline for responding to the MOQs submitted by the members of the Diet. Although the statutory response time is seven days, the actual time that government officials can work on the MOQ is very short due to administrative restrictions on the Cabinet meeting. In 2018, the protocol for handling the MOQs was changed to relax this time constraint, as explained in the next subsection.

An MOQ submitted by the Speakers of the Houses is transferred to the Cabinet, and the law requires the Cabinet to respond within seven days after the transfer of the MOQ.The response is in the form of a written document, which is drafted by the relevant ministries and evaluated by the Cabinet Legislation Bureau.

Although the statutory response time is seven days, the actual time constraint is much tighter for government officials owing to three administrative restrictions. First, although government officials draft the response, it must be approved by the Cabinet. Second, regular Cabinet meetings take place only twice a week, on Tuesdays and Fridays. Third, the agenda for the Cabinet meeting must be registered by noon two business days prior to the meeting. These three administrative restrictions set the effective deadline much earlier than the statutory deadline and substantially shorten the time that government officials are able to work on responses.

Figure 1 illustrates the timeline of handling the MOQs. The top panel, Figure 1(a), shows the case in which the MOQ is submitted on a Monday or Tuesday. All MOQs submitted to the speakers of the House of Representatives and of the House of Councillors are transferred to the Cabinet twice a week: on Monday

and Wednesday. For example, the MOQs submitted on Mondays and Tuesdays (week 1) are transferred to the Cabinet on the following Wednesday (week 1), which determines the next Wednesday (week 2) as the statutory deadline to respond. However, since the response needs to be approved by the Cabinet meeting on a Tuesday, the response must be registered by Friday noon, so government officials only have two days to prepare the response. Given that the documents need to go through numerous evaluations within the relevant ministry and the Cabinet Legislation Bureau before registration, the deadline is extremely tight.

The bottom panel, Figure 1(b), shows the case where the MOQ is submitted between Wednesday and Friday. Similar to the previous case, MOQs submitted between Wednesday and Friday (week 1) are transferred to the Cabinet on the following Monday (week 2), which determines the next Monday (week 3) as the statutory deadline to respond. Since this response should be approved during the Cabinet meeting on Friday (week 2) in the previous week, which should be registered by Wednesday noon (week 2), the government officials have only two days to work on the response.

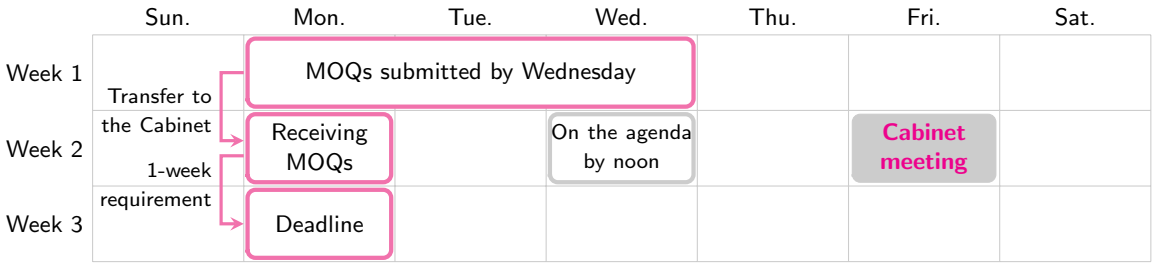
It is important to emphasize that government officials have immediate access to the content of MOQs after submission before they are officially transferred to the Cabinet. As a result, the actual number of days that government officials have available for preparation is slightly longer than two days.

Due to the statutory nature of MOQs and the extremely tight time constraints, preparing responses to MOQs becomes one of the most important tasks for government officials to complete and is more prioritized than other tasks.

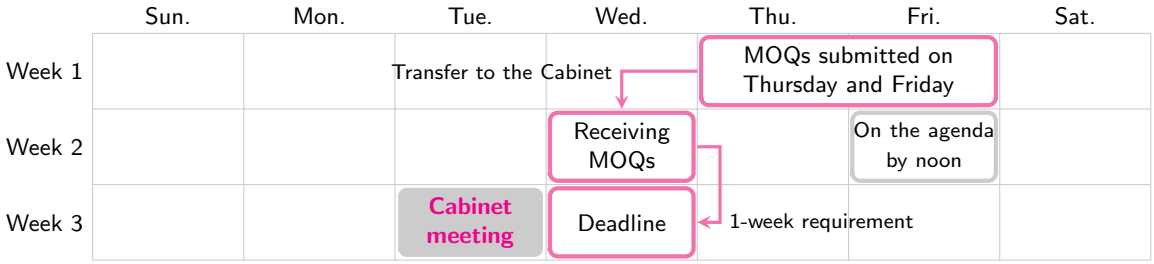
2.3 Timeline of MOQ after 2018

The time constraints for responses to MOQs were relaxed for the House of Representatives since the 197th Extraordinary Diet, which was held in October 14–December 10, 2018.[6] Specifically, the timing of the official transfer to the Cabinet has been postponed. As depicted in the top panel Figure 2(a), MOQs submitted between Monday and Wednesday (week 1) are transferred to the Cabinet on the following Monday (week 2), which determines the next Monday (week 3) as the statutory deadline to respond. Similarly, MOQs submitted between Thursday and Friday (week 1) are transferred to the Cabinet on the following Wednesday (week 2), which determines the next Wednesday (week 3) as the statutory deadline. This delay in official transfer gives government officials a few extra days to prepare because they have immediate access to the content of the MOQs upon submission before the official transfer. A similar schedule applies to MOQs submitted on Thursday and Friday, as shown in the bottom panel Figure 2(b). Because of this change, government officials now have four to six full working days before the effective deadline. This change was intended to

[6]The House of Councillors adopted the same policy from the 199th Extraordinary Diet held between August 1, 2019, and August 5, 2019.



(a) Relaxed Schedule: MOQs Submitted by Wednesday



(b) Relaxed Schedule: MOQs Submitted on Thursday and Friday

Figure 2: Timeline of Handling MOQs: After 2018

Table 1: The Number of Working Days after Submission

	Effective Deadline		Number of Working Days	
Submission of MOQ	Before 2018	After 2018	Before 2018	After 2018
Monday	Friday (1)	Wednesday (2)	3	6
Tuesday	Friday (1)	Wednesday (2)	2	5
Wednesday	Wednesday (2)	Wednesday (2)	4	4
Thursday	Wednesday (2)	Friday (2)	3	5
Friday	Wednesday (2)	Friday (2)	2	4

Note: This table compares the effective deadline and number of working days before and after 2018, for each day of the week when the MOQ is submitted. The number in parenthesis indicates the week. The number of days counts the full working days between submission and the effective deadline.

reduce the burden on government officials by relaxing the time constraint to respond to MOQs.

Table 1 summarizes the effective deadline set by the registration for a Cabinet meeting and the number of working days between the submission of an MOQ and its effective deadline, before and after 2018. For example, the effective deadline for responses to an MOQ submitted on Monday was Friday before 2018, while it becomes next Wednesday after 2018. As a result, the number of full working days between submission and the deadline is extended from three days to six days. Note that, unlike other days of the week, the time constraint for MOQs submitted on Wednesday is four working days and was not affected by this change. We will use this feature to evaluate the consequence of shifting from a paper-based system to a paperless system, which will be explained in the next subsection.

2.4 Shift to Paperless System

In 2019, the Diet changed the regulations of MOQs to digitize MOQs and move toward a paperless system to improve the efficiency of handling MOQs and reduce relevant administrative costs.[7] Before August 2019, the MOQ system had been completely paper-based, in which official transfer of MOQ was sent by fax and responses were printed and distributed to all members of the Diet. In accordance with this change, the requirement for the format of the responses was also simplified in 2020. Before 2020, there were strict requirements for the formatting of documents in the Cabinet meeting in terms of font size, the number of characters in a single column, the number of columns, margins, and so on. To meet such formatting requirements on a hard copy, government officials had to spend additional time preparing their responses.

3 Data

3.1 Mobile Location Data

Our mobile location data covers four 500-square-meter areas in Kasumigaseki, which are shown in Figure 3,[8] from January 1, 2014, to December 31, 2021. It is based on the location information of NTT Docomo, Inc., the largest mobile phone carrier in Japan. The information in this data set is based on 80 million mobile phones. Unlike other data sets based on GPS information, the location information is based on mobile phones' communication with base stations, which provides technological merits for our analyses: when mobile phones are turned on, they keep accessing nearby base stations even when they are not used. This means that we can obtain more accurate tracking of users than a GPS-based system, which requires that the GPS needs to be enabled and applications that use the GPS must be used.

Figure 4 illustrates the overall population dynamics of the Kasumigaseki area. Each line in Figure 4 indicates an hourly population in thousands on a particular day. Our observation at a particular time is the number of people who are staying in the area for 60 minutes. If a person stays in the area for 15 minutes, she is counted as a quarter person. The number for a particular time slot corresponds to the number of people in the subsequent 60 minutes.[9] Note that we define that a typical day starts at 5:00 in the morning, when the first train arrives at Kasumigaseki station, and it ends at 28:00, which is 4:00 the following morning. The beginning and end of the day correspond to when we observe the minimum population in the Kasumigaseki

[7] The House of Councillors adopted the digitalized MOQ from the 199th Extraordinary Diet between August 1 and August 5, 2019, while the House of Representatives adopted the same rule in the 200th Extraordinary Diet between October 4 and December 9, 2019. Note that the shift to the paperless system and adoption of the less restrictive schedule happened at the same time for the House of Councillors.

[8] The Half Grid Square codes defined by JISX0410 for Areas 1, 2, 3, and 4 are `5339-4519-2`, `5339-4610-1`, `5339-4509-4`, and `5339-4600-3`, respectively.

[9] For example, if we observe 100 people in a particular area at, say, 8:00, it could mean that 100 people stay there for one hour, or 600 people remain in the area for 10 minutes each. We cannot identify the difference between these two.

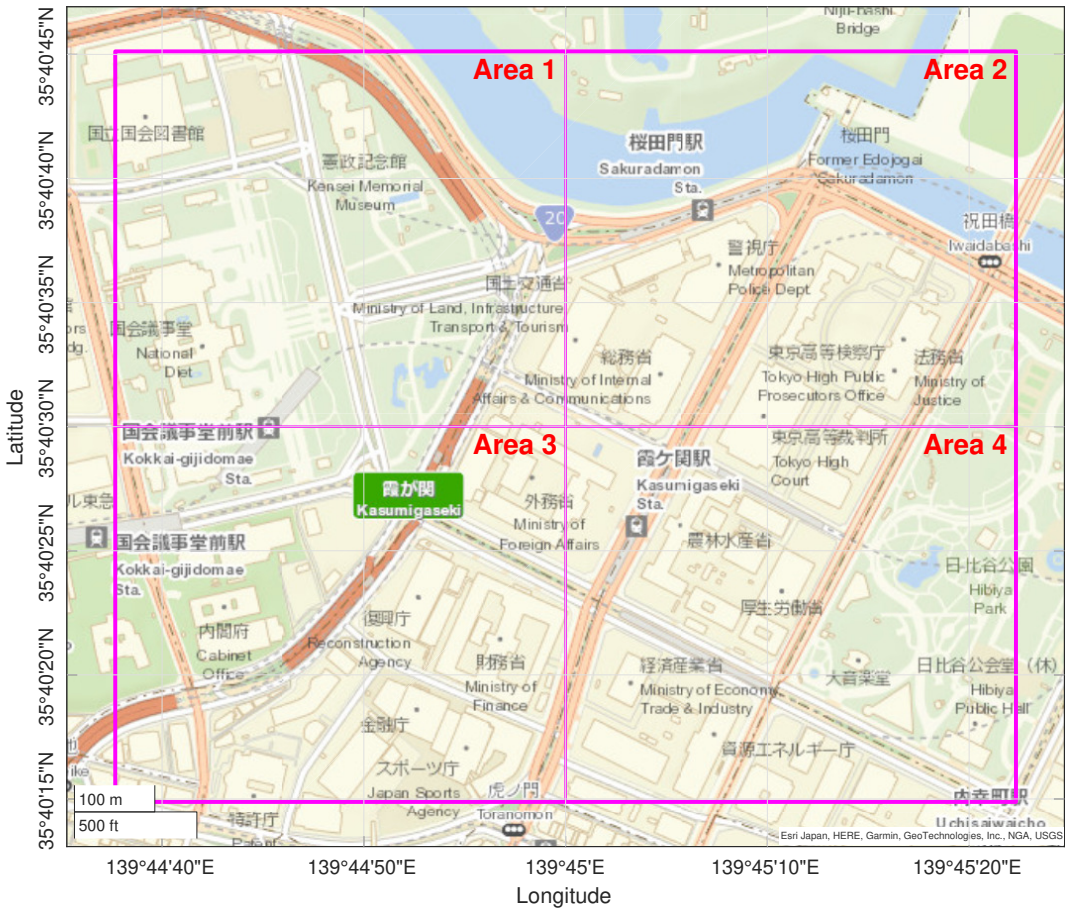


Figure 3: Kasumigaseki Area

Note: Area 1 includes a part of the Ministry of Foreign Affairs and the Ministry of Land, Infrastructure, Transport and Tourism. Area 2 contains the Metropolitan Police Department, the Ministry of Justice, the Ministry of Internal Affairs and Communications, the Ministry of Land, Infrastructure, Transport and Tourism, the Fire and Disaster Management Agency, the Public Security Intelligence Agency, and the Japan Fair Trade Commission. Area 3 includes a part of the Ministry of Foreign Affairs, the Ministry of Economy, Trade and Industry, the Ministry of Agriculture, Forestry and Fisheries, the Ministry of Health, Labour and Welfare, the Ministry of the Environment, and the National Personnel Authority. Area 4 comprises the Ministry of Foreign Affairs, the Ministry of Finance, the National Tax Agency, the Cabinet Legislation Bureau, the Cabinet Office, the Ministry of Education, Culture, Sports, Science and Technology, the Board of Audit, the Financial Services Agency, and the Patent Office.

area. Since we are interested in the overtime work of government officials, our data are on people of age groups from the 20s to 60s. In our data set, we can observe information about gender in addition to age categories.

As can be seen in Figure 4, there are predictable patterns in the population dynamics. Kasumigaseki is a government district.People arrive at their offices by 10:00. Some of them leave the area for a lunch break. They start to leave their offices at around 16:00, but there are more divergent patterns in leaving their offices. Even after midnight, we observe a non-negligible size of population. Over the weekends, we also observe that some people coming into this area (represented by the group of lines that are clustered

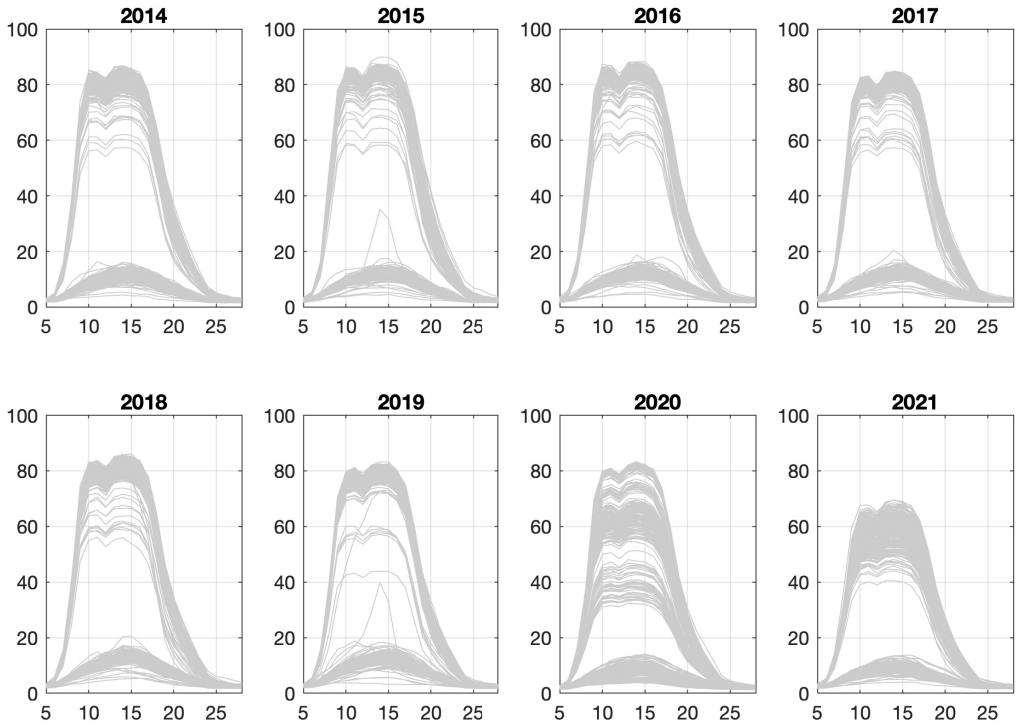


Figure 4: Mobility Patterns in the Kasumigaseki Area (thousands)

Note: Clock time is on the horizontal axis from 5:00 to 28:00, which is 4:00 in the next morning. The vertical axis measures the number of people in the Kasumigaseki area in thousands.

less than twenty thousand and are peaked around 15:00). However, the size is not so comparable to that of weekdays.

After the COVID-19 pandemic, we observe slightly different patterns. As working from home was widely encouraged during the pandemic, the area population decreased by more than 20% during weekdays. The day-to-day variations differ when we compare 2019 and 2021. In the transition, there are large changes in the area population in 2020.

3.2 MOQ Data

Figure 5 shows the daily number of MOQs submitted from 2014 to 2021. Shaded areas in the Figure correspond to the periods when the Diet was in session. The Diet members can submit MOQs when the Diet is in session. Figure 5 shows that there are relatively large spikes in the number of MOQs submitted at the beginning of Diet periods. These spikes reflect accumulated questions during the non-Diet period being submitted at once. We also see a large number of "last-minute" submissions of the MOQs at the end of Diet periods. These "last-minute" MOQs would stem from the fact that some voters regard an MOQ submission

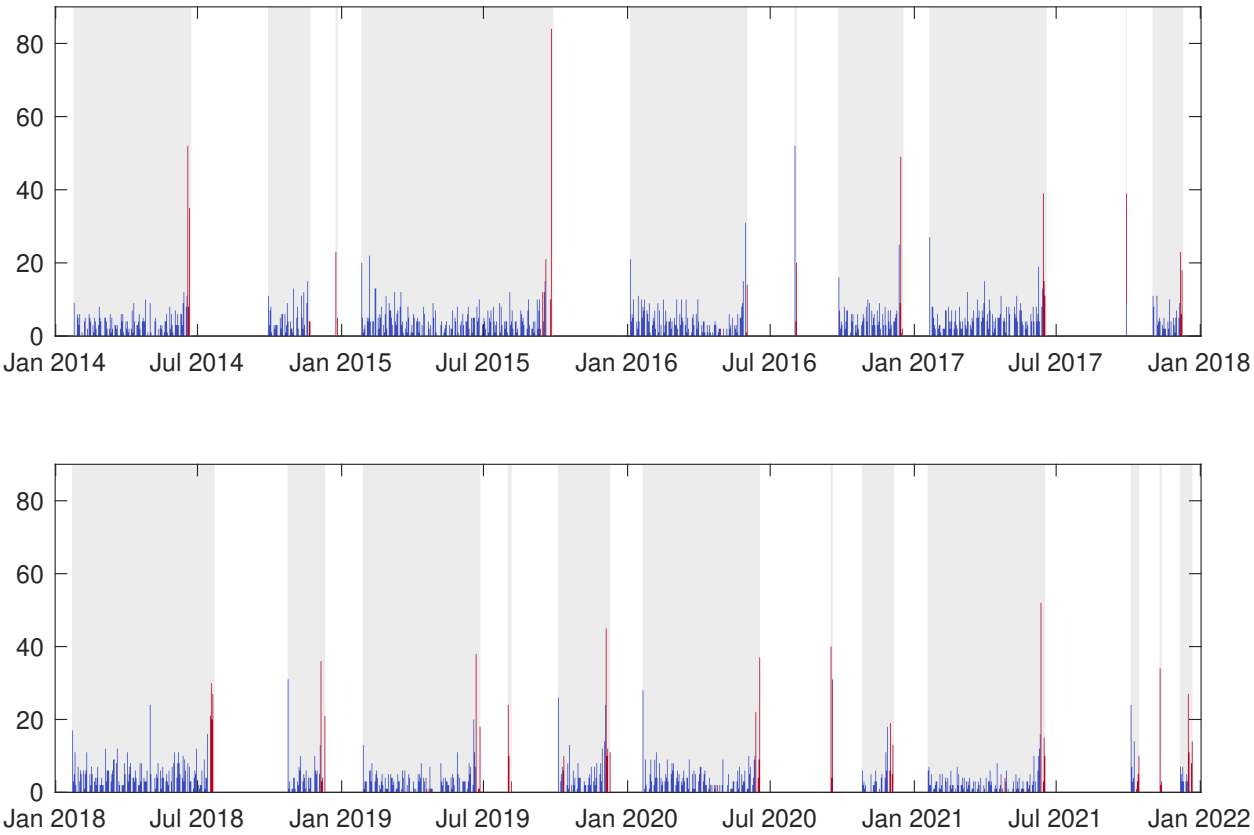


Figure 5: The Number of the Memorandum of Questions Submitted

Note: The top panel shows the number of MOQs submitted from 2014 to 2017 and the bottom panel covers from 2018 to 2021. The dark blue bars represent the number of MOQs that were responded to without any delays. The red bars indicate the number of MOQs with delayed responses. Shaded areas indicate when the Diet was in session.

as an important contribution by politicians, which encourages some members of the Diet to make last-minute contributions. Typically, these last-minute MOQs are responded to with delays.

We exclude MOQs if their responses are delayed because the 1-week requirement is not binding. We retrieve detailed information on MOQs, which is available from the websites of the House of Representatives and the House of Councillors. It includes the name of the submitter, date of submission, date of transfer from the House to the Cabinet, date of response, and the open-ended content of the questions and the replies, together with whether the responses are postponed or not. From this information, we identify the MOQs with delayed responses, which are indicated by red bars in Figure 5.

We also exclude MOQs handled by the Ministry of Defense and the Nuclear Regulation Authority, both of which are located outside the Kasumigaseki area. The websites of the Houses do not contain any information about which ministry has handled the MOQs. We identify which ministry is primarily responsible for a particular MOQ by examining the agendas of Cabinet meetings.

4 Model

We are interested in the impact of submitting an extra MOQ on the overtime work of government officials in the near future. In other words, for $h = 0, 1, \cdots$, our objective is to compute

$$\frac{\partial p_{HH,t+h}}{\partial q_t}, \tag{1}$$

where $p_{HH,t}$ represents the log hourly population at HH o'clock on weekday t and q_t corresponds to the number of MOQs submitted at date t.[10]

Using the local projection method proposed by Jordá (2005),[11] we estimate (1) from the following single regression

$$p_{HH,t+h} = \alpha + \theta_{HH,h} q_t + \boldsymbol{\phi}'_{HH,h} \boldsymbol{x}_t + e_{HH,t+h}, \tag{2}$$

where α is a constant term, $\boldsymbol{x}_t$ represents a vector of the control variables, $\boldsymbol{\phi}_{HH,h}$ corresponds to the associated vector of coefficients, and $e_{HH,t+h}$ is an error term. Our interest is on $\theta_{HH,h}$, which measures how the area population at HH o'clock changes h days after an MOQ is submitted on date t. The control variables include the past log population, a measure of media coverage, and a set of dummy variables. The past log population consists of the early-time population of the same date and the lagged population on earlier dates. It is given by

$$\underbrace{\sum_{i=1}^{p} \beta_i p_{HH-i,t}}_{\text{early-time population}} + \underbrace{\sum_{j=1}^{d} \gamma_j p_{HH,t-j}}_{\text{lagged population}}. \tag{3}$$

We include a measure for media coverage that is relevant to the government ministries.[12] This measure is intended to capture the effect of ongoing policy debates and government-related scandals that could affect the overtime work of government officials. A set of dummy variables contains (i) the Diet period dummy, (ii) year dummies, (iii) day-of-week dummies, (iv) national holiday dummies (including observed ones), and (v) state of emergency dummies (when they are relevant).[13]

A critical presumption is that the number of MOQs and the timing of the submission are exogenous so that changes in q_t are "shocks" to government officials. One way to justify this assumption is to check autocorrelation in q_t. Figure 6 presents the sample autocorrelation functions of q_t by year. Overall, we do

[10] We focus on weekday observations. The inclusion of weekend observations does not affect our result, but it complicates the interpretation of the estimation results.

[11] For a more recent discussion, see Montiel Olea and Plagborg-Møller (2021) and Plagborg-Møller and Wolf (2021).

[12] Our measure is based on the Nikkei Newspaper articles. We search for the number of Nikkei articles that contain a list of ministries. We count the total characters of the relevant articles. We exclude articles that report promotions of government officials and conferring decorations and special reports on official land prices.

[13] During the COVID-19 pandemic, Tokyo experienced a state of emergency four times: April 7–May 25, 2020, January 8–March 21, 2021, April 25–June 20, 2021, and June 12–September 30, 2021.

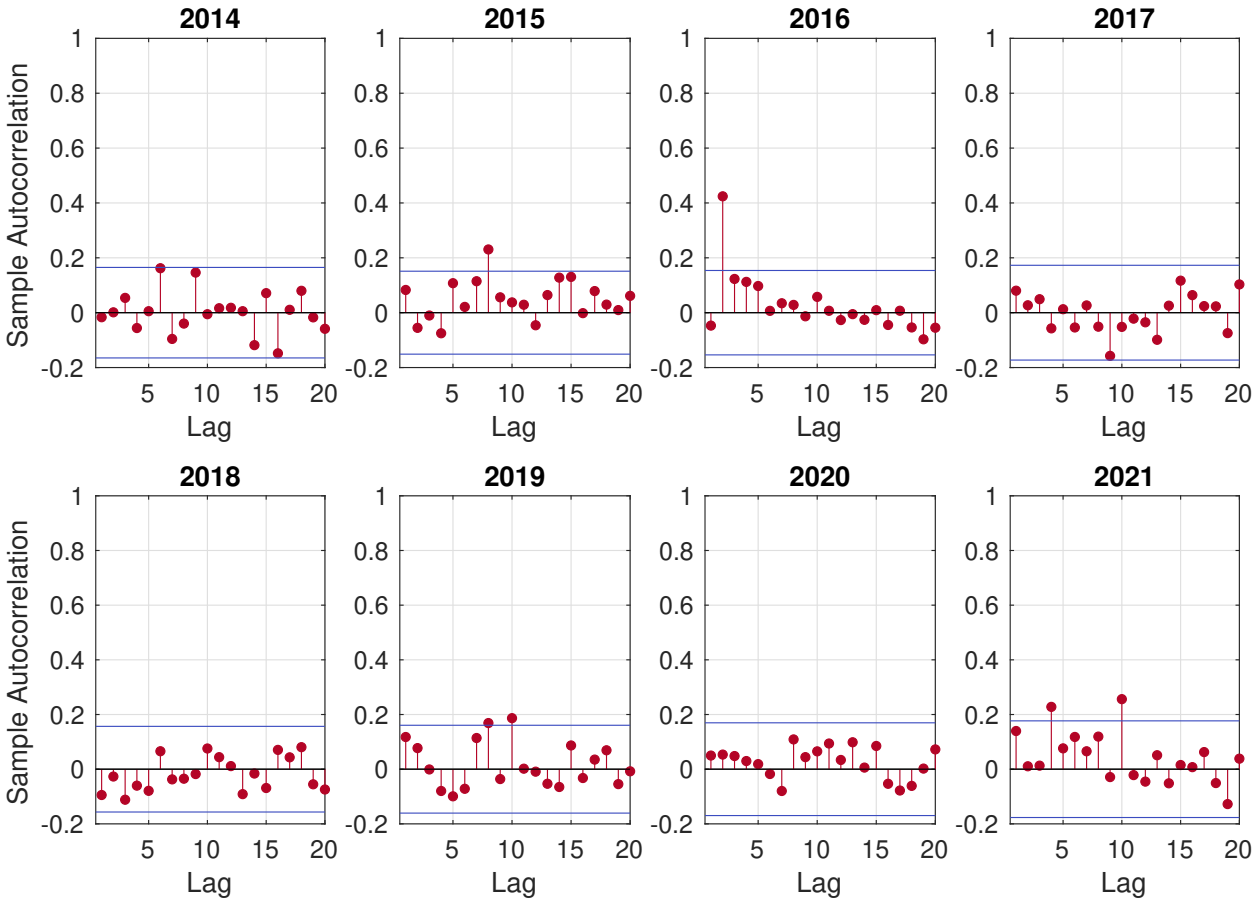


Figure 6: Sample Autocorrelation of the MOQ by Year

Note: Each plot shows sample autocorrelation of non-delayed MOQs. The blue lines indicate ±2 standard-error confidence bounds based on the assumption that it is white noise.

not need to worry about serial correlation in q_t. The only exception may be the MOQs submitted in 2016. The results of the Ljung-Box tests are in line with the visual impression from Figure 6. We fail to reject the null hypothesis that there is no autocorrelation, except in 2016.

The exogenous nature of submitting MOQs can be supported from a different angle. Tanaka (2008), who documents the detailed procedures for preparing responses to MOQs from a public administration perspectives, provides supportive evidence for the exogeneity of MOQs. Tanaka (2008) argues that government officials cannot anticipate the submission of MOQs. He also emphasizes the abruptness of MOQs because the Diet members can ask questions about anything at anytime (during the Diet period) whenever they think it is necessary and need to receive replies within a week. Of course, there are some predictable MOQs that can be identified by skimming through the list of MOQs. For example, when the Diet starts, we almost always observe a set of questions submitted by particular Diet members on certain matters. When there are scandals related to ministries and government agencies, we can easily predict that related MOQs will be

submitted. Given that a single Diet member can submit MOQs anytime, we cannot anticipate exactly when they will be submitted. We provide some robustness checks to address this issue.

Even when the submission of MOQs is anticipated, the impact on the overtime population can be accurately measured. First, the difficulty and complexity of how to respond and how long it takes to prepare are unpredictable. Second, from the viewpoint of an individual government official, it is unpredictable whether she or he will be assigned to it or not. This is related to the fact that when MOQs are submitted, negotiations among representatives from ministries determine which ministry will be responsible for the MOQs. Third, government officials are already working at their margins. The anticipation affects our results greatly when there is room for government officials to smooth their workloads. However, it is a well-known fact that the working environment for government officials is extremely tight and overtime work is quite common. It does not make sense to prepare for something that has not been submitted yet when they are already overloaded and working on the intensive margin.

It is possible that the mobility dynamics in the Kasumigaseki area are affected by something other than our control variables. One possibility is the flow from neighboring areas. It might be relevant, especially during the daytime. However, we do not know the mesh-to-mesh flow of people. To the extent that such a flow is unrelated to the number of MOQs, the estimated impact of the MOQ shock will be unaffected. Moreover, there are no other high-frequency data available to account for the determinants of the area's population. One potential candidate would be to include weather-related variables, such as temperature and rainfall. However, the area of interest is a business district. Unlike recreational or tourist places, it seems that the area population in the business district is less likely to be affected by changes in weather. Even when this is the case, the lagged population in the area can account for such an effect. It may be important to include forward-looking variables, such as heavy rain/snow warnings, however. These warnings may induce people to go home earlier. Again, to the extent that these warnings are unrelated to the MOQ submission, the estimated impact of the MOQ will be unrelated.

5 Results

This section examines the estimated impact of MOQs on the overtime population

$$\frac{\partial p_{HH,t+h}}{\partial q_t} = \hat{\theta}_{HH,h}, \tag{4}$$

for $HH = 17, \cdots, 28$. For each HH, we estimate this for $h = 0, 1, \cdots, 14$, that is for two weeks ahead. We set $p = 3$ and $d = 1$ for the past population in (3). To the extent that we include a sufficient number of lags

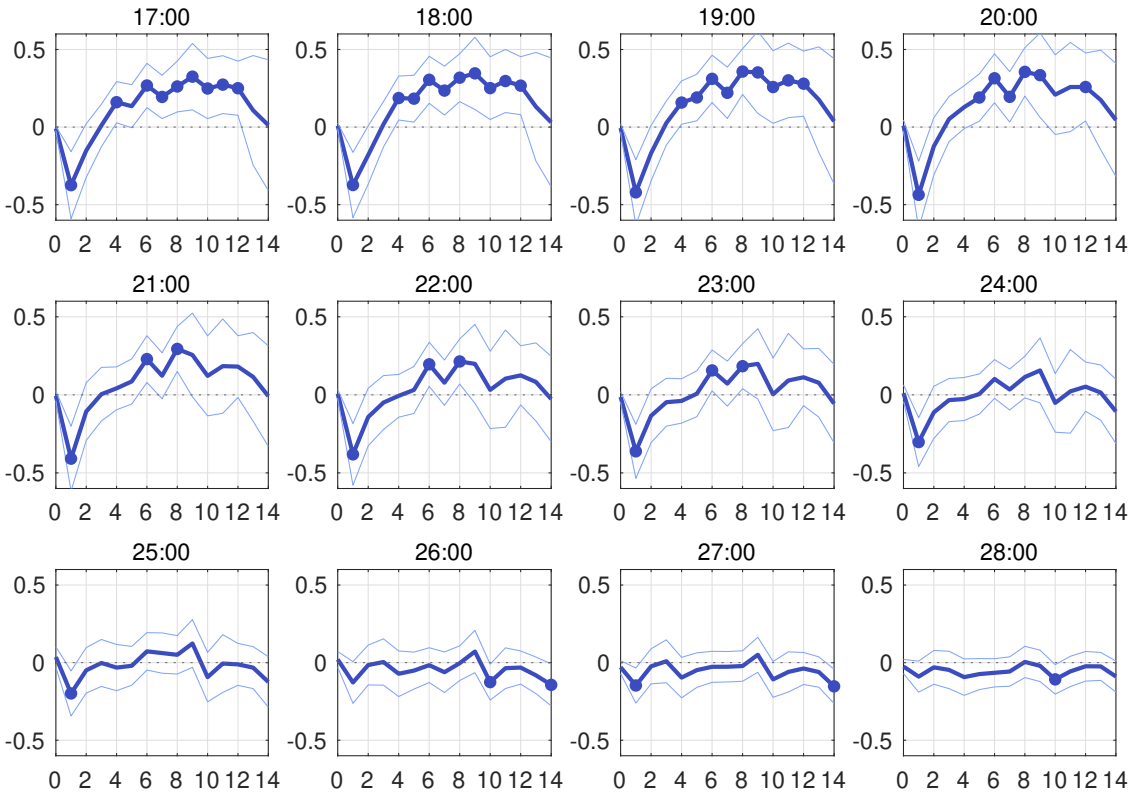
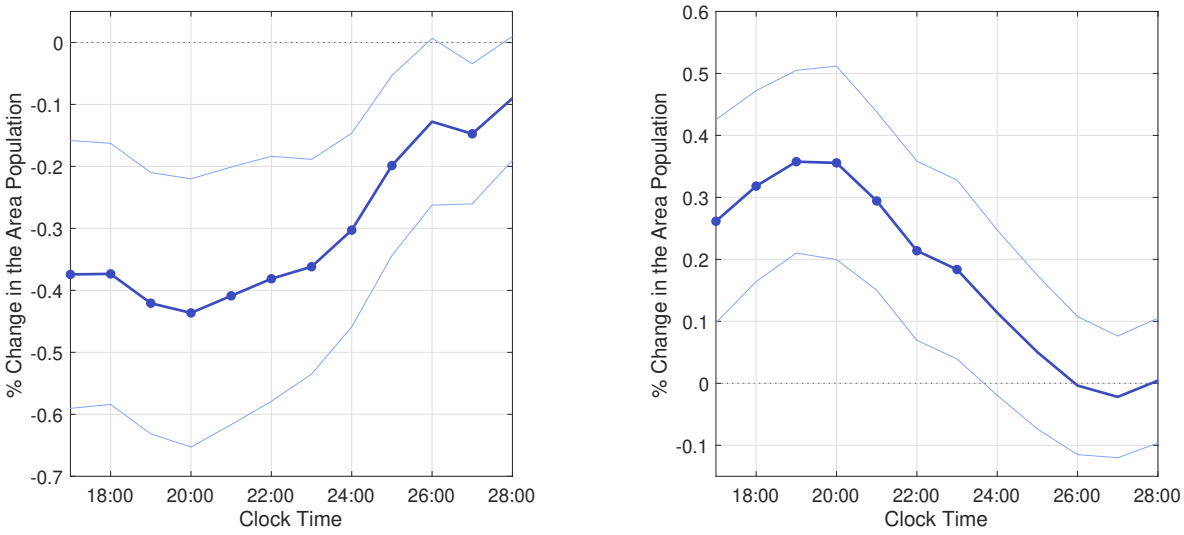


Figure 7: Impact of the MOQ Shock on the Nighttime Population in Kasumigaseki

Note: Vertical axes measure percentage changes in area population. Horizontal axes measure the number of working days after an MOQ is submitted. Thick lines are point estimates, and thin lines represent ±2-standard-error bands. Dots indicate significant responses.

for the past population, the estimated results are robust to different choices of p and/or d. It is a common practice to use the Newey-West standard errors because it is typically argued that the error term is serially correlated. As discussed in Montiel Olea and Plagborg-Møller (2021), however, our specification includes the lagged population in the controls and, thus we use the standard heteroscedasticity-robust standard errors for constructing the error bands. Error bands tend to be wide with local projection (c.f., Ramey, 2016; Barnichon and Brownlees, 2019). Therefore, our results can be viewed as conservative estimates of the impact of MOQs on overtime work in the Kasumigaseki area.

We begin by looking at the unconditional responses of overtime work to an MOQ shock, which is an exogenous increase in the number of MOQs submitted on date t. After providing a validity check for exogeneity, we decompose the unconditional responses. Furthermore, we explore the consequences of submitting an MOQ under different circumstances.



(a) 1-Day-Later Responses

(b) 8-Day-Later Responses

Figure 8: Responses to the MOQ Shock for Selected Dates

Note: Vertical axes measure percentage changes in area population. Horizontal axes represent clock time. Thick lines are point estimates, and thin lines represent ±2-standard-error bands. Dots indicate significant responses.

5.1 Unconditional Responses

Interestingly, the MOQ shock initially reduces the area population and then increases overtime work persistently. Figure 7 shows percentage changes in the area population in response to the MOQ shock. Each panel in Figure 7 displays responses in each clock time, HH. That is, it plots $\hat{\theta}_{HH,t+h} \times 100$ as a function of the number of working days after the MOQ shock, h, which is on the horizontal axis of each panel. Thick lines represent point estimates, and thin lines correspond to ±2-standard-error bands. Dots indicate significant responses. There are no significant responses observed on the impact day ($h = 0$). Interestingly, one day after receiving the MOQ shock, we observe large drops in the Kasumigaseki population from 17:00 to 25:00 (and at 27:00). On average, it takes time for the MOQ shock to increase overtime work significantly. Four days after the shock, the early-evening population starts to increase significantly. Six to eight days after the shock, the MOQ shock still has a significantly impact on the late-night population (from 21:00 to 23:00).[14]

There are significant effects observed even 12 days after the MOQ shock. Because of the 1-week requirement, we do not expect to see changes in the overtime population beyond the deadline of the MOQ. However, it is possible that the MOQ shock can have persistent impacts on overtime work if the additional tasks created by the MOQ shock crowd out the day-to-day routines. In fact, this may be the case, because we observe significant increases in the overtime population 12 days later. This can happen if there is a rippled effect on regular tasks when preparing for a reply to an MOQ. We call this indirect impact beyond the MOQ

[14] A significant increase at 23:00 means the area population from 23:00 to 23:59 is increased significantly in a statistical sense.

Table 2: Average Population during the Diet Period

		Estimated Changes	
Time	Population	1-day Later	8-day Later
17:00	66,026	-247	173
18:00	52,950	-198	169
19:00	37,463	-158	134
20:00	26,796	-117	95
21:00	19,134	-78	56
22:00	13,173	-50	28
23:00	8,399	-30	15
24:00	4,557	-14	5
25:00	3,463	-7	2

Note: The population is the average number during the weekdays in the Diet period. The estimated changes in the area population are calculated based on the point estimates for $h = 1$ and $h = 8$.

deadline a congestion effect. On average, we observe congestion effects in the early-evening periods. The magnitude is comparable to the direct impact we observed earlier. This congestion effect is an important side effect of ppoliticians' MOQ submission.

Figure 8 summarizes the responses for selected dates. The responses of overtime work one day after receiving the MOQ shock are shown in Figure 8(a) and Figure 8(b) show the responses eight days later. One day after receiving the MOQ shock, overtime work decreases significantly after 17:00. It peaks at 20:00 and gradually returns to zero. At 20:00, the area population is reduced by more than 0.4%. Unlike the initial decreases, we observe increases in the area population even eight days after the shock. The overtime work increases at 17:00 by more than 0.2% and shows hump-shaped responses and remains significant until 23:00. It becomes insignificant after 24:00. This result suggests that upon receiving the MOQ shock, government officials work overtime until midnight.

Is the impact negligible? We argue that it is not. Typically, a single MOQ is assigned to one person. If his/her overtime work is affected, it might be acceptable because preparing a reply in a timely manner is necessary to guarantee healthy discussion among politicians and transparency in the Cabinet. However, if more than one government official is involved, submitting an MOQ creates a negative spillover effect. Table 2 summarizes back-of-envelope calculations based on the average weekday population in each time slot when the Diet is in session. For example, one day later, a single MOQ decreases the area population by 30 people at 23:00. Eight days later, more than 15 people are still working overtime due to the MOQ shock. This is clearly non-negligible.

A caveat here is that the estimated results after 24:00 may be overstated. The last train from Kasumigaseki station departs at around 24:30. When a government official leaves the Kasumigaseki area after the last train, it is typically accompanied by a taxi driver. In this case, we count two people leaving the area

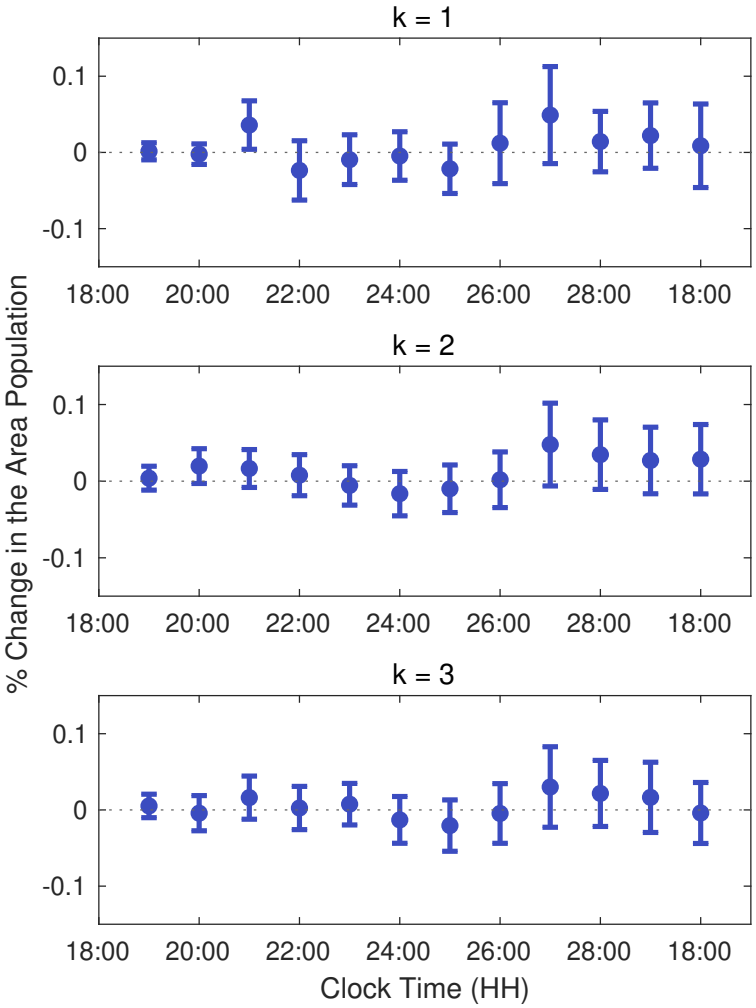


Figure 9: Placebo Test

Note: The above plots show $\partial p_{HH,t-k}/\partial q_t \times 100$ for $k = 1, 2, 3$. Vertical axes measure percentage changes in area population. Horizontal axes correspond to clock time. Error bars are based on ± 2 standard error.

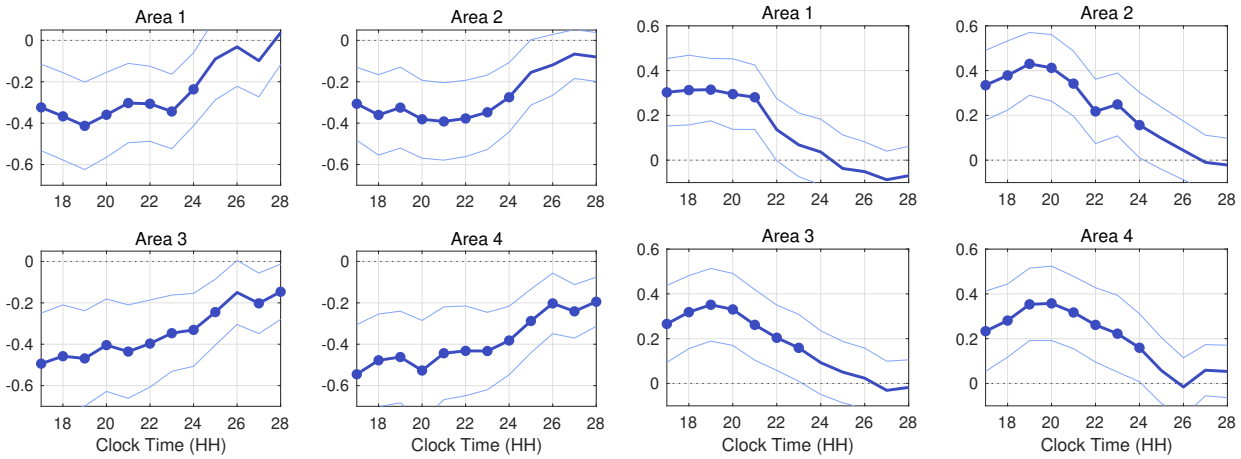
together, and there is no way to exclude such a possibility.

5.2 Placebo Test

The validity of our estimate hinges on the fact that the submission of an MOQ is exogenous to government officials. To some extent, some MOQs may be anticipated, especially those submitted at the beginning of the Diet period. To examine this possibility, we estimate

$$\frac{\partial p_{HH,t-k}}{\partial q_t} \tag{5}$$

for $k = 1, 2, 3$ as placebo tests. That is, we estimate changes in the population *in the past* when there is an additional increase in the MOQ *today*. Figure 9 summarizes the results of this placebo test.



(a) 1-Day-Later Responses

(b) 8-Day-Later Responses

Figure 10: Area-Specific Responses to the MOQ Shock for the Selected Dates

Note: Vertical axes measure percentage changes in area population. Horizontal axes represent clock time. Thick lines are point estimates, and thin lines represent ±2-standard-error bands. Dots indicate significant responses.

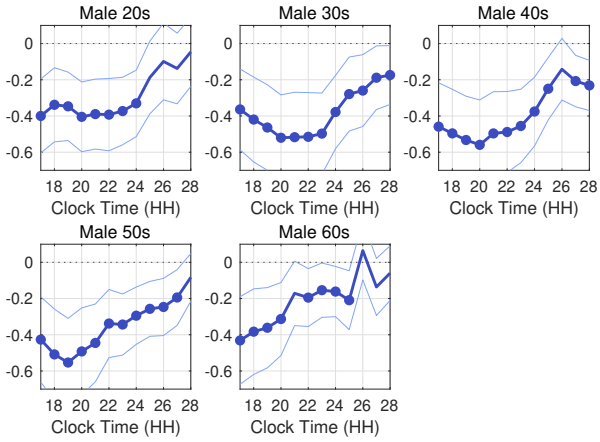
Almost all the responses are insignificant. The only exception is when $k = 1$ at 21:00. Although it appears to be marginally significant, the magnitude is economically quite small. This result suggests that the overtime population is not reacting to potential or anticipated changes in the number of MOQs.

This result is consistent with the working environment of Japanese government officials. They are known to be extremely busy and they are always working at extensive margins. In such an environment, there is no incentive to react to something that is more or less anticipated, but has not yet materialized. Even when a particular MOQ is anticipated, there is no reason to believe that she or he will be assigned to it.

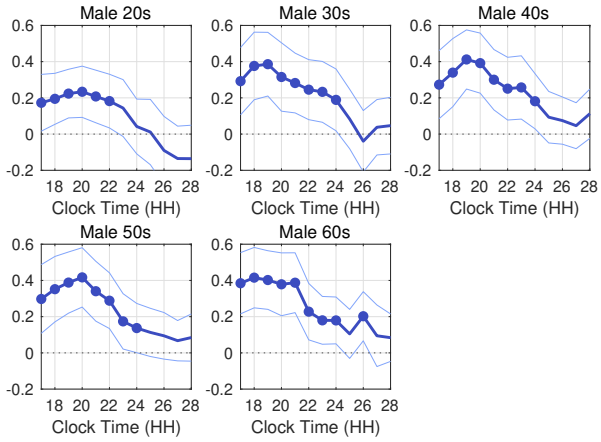
5.3 Decomposing the Unconditional Responses

In this subsection, we decompose the unconditional responses to an MOQ shock by examining the impact on the subcategories of $p_{HH,t+h}$. Our dataset allows us to decompose responses into four different areas as shown in Figure 3. It is also possible that we can examine the different responses of the area population by gender and age group.

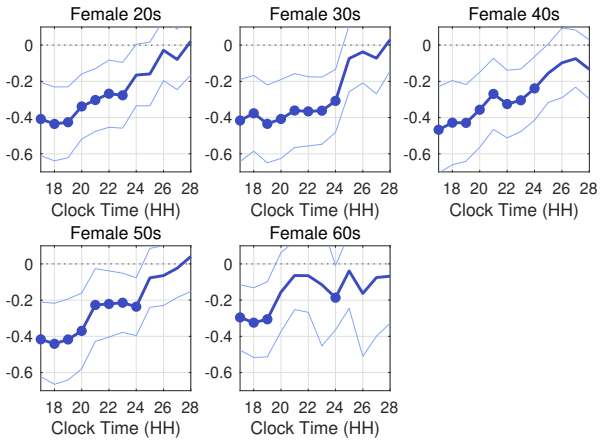
Figure 10 presents area-specific responses to an MOQ shock. The left panels are responses one day later, and the right panels are responses eight days later. For initial decreases in overtime work, most of the action seems to come from Areas 3 and 4. While the responses in Area 2 become insignificant after 24:00, those in Areas 3 and 4 remain significant. However, Area 2 is relatively more dominant for eight days later in terms of increases in overtime work than Areas 3 and 4. Area 1 shows somewhat muted responses compared with other areas. This is because there are not many ministries located in Area 1. The Diet and the Diet Library mostly occupy Area 1.



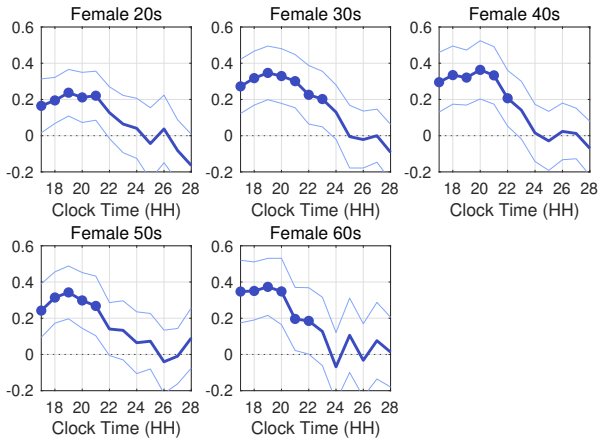
(a) Male-Age-Specific Responses One Day Later



(b) Male-Age-Specific Responses Eight Days Later



(c) Female-Age-Specific Responses One Day Later



(d) Female-Age-Specific Responses Eight Days Later

Figure 11: Gender-Age-Specific Responses to the MOQ Shock

Note: The top panels show male-age-specific responses, and the bottom panels are female counterparts. The left panels are responses one day after the MOQ shock, while the right panels correspond to those eight days after the shock. Vertical axes measure percentage changes in area population. Horizontal axes measure clock time. Thick lines are point estimates, and thin lines represent ±2-standard-error bands. Dots indicate significant responses.

We observe heterogeneous patterns in terms of gender- and age-specific responses. Figure 11 summarizes gender- and age-specific responses to MOQ shocks. The top panels show the responses of male government officials of different age groups and the bottom panels correspond to female counterparts. The left panels are responses one day after the MOQ shock, while the right panels correspond to responses eight days after the shock.

For each age category, male responses are stronger and more persistent than female counterparts. This remains true regardless of increases or decreases in the area's population.

Compared with other age groups, government officials in their 20s are less responsive to MOQ shocks than other age groups, regardless of gender. This is interesting because it is widely believed that young government

officials have to work long hours in such a challenging working environment causes health problems, and this is why young government officials resign. It could be that government officials in their 20s are always working at their margins regardless of whether MOQs are being submitted or not. In other words, there is almost no room for adjustment in their intensive margins, which would be consistent with their weaker responses.

The responses of officials in their 60s are somewhat insignificant, especially among female officials. An important caveat here is that most government officials retire at the age of 60. To be precise, they retire on March 31 in the fiscal year, in which they turn 60. There are some exceptions for higher-ranked officials, but there might not be enough officials in their 60s who are affected by the submission of MOQs. Another concern is the effect of taxi drivers after midnight. We cannot avoid double-counting taxi drivers if government officials leave the Kasumigaseki area by taxi. Some taxi drivers are also in their 60s. Therefore, the responses of officials in their 60s need to be interpreted with caution.

5.4 Consequences of Relaxing the Time Constraint

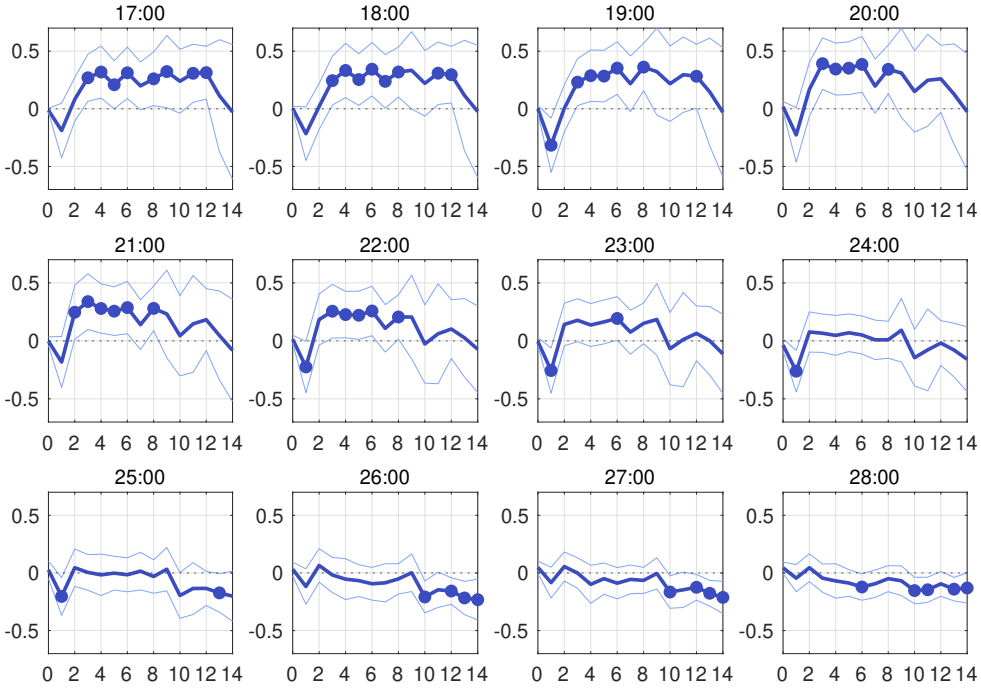
In this subsection, we explore the effects of MOQ shocks under different time constraints. Thus far, we estimated the impact of an MOQ shock on the Kasumigaseki population over the sample period as if the time constraints are the same. As explained in Section 2, the schedule was much tighter before 2018, and has since been relaxed to allow for additional time. In addition, MOQs used to be completely paper-based. The paperless system was first introduced to the House of Councillors in the 199th Extraordinary Diet (August 1 – August 5, 2019) and then to the House of Representatives from the 200th Extraordinary Diet (October 4, 2019 – December 9, 2019).

First, we examine the effect of an MOQ shock under the tight time schedule, as illustrated in Figures 1(a)–1(b). In this exercise, we only include MOQs with tight deadlines (from the 186th Ordinary Diet to the 196th Ordinary Diet for the House of Representatives, and to the 198th Ordinary Diet for the House of Councillors).

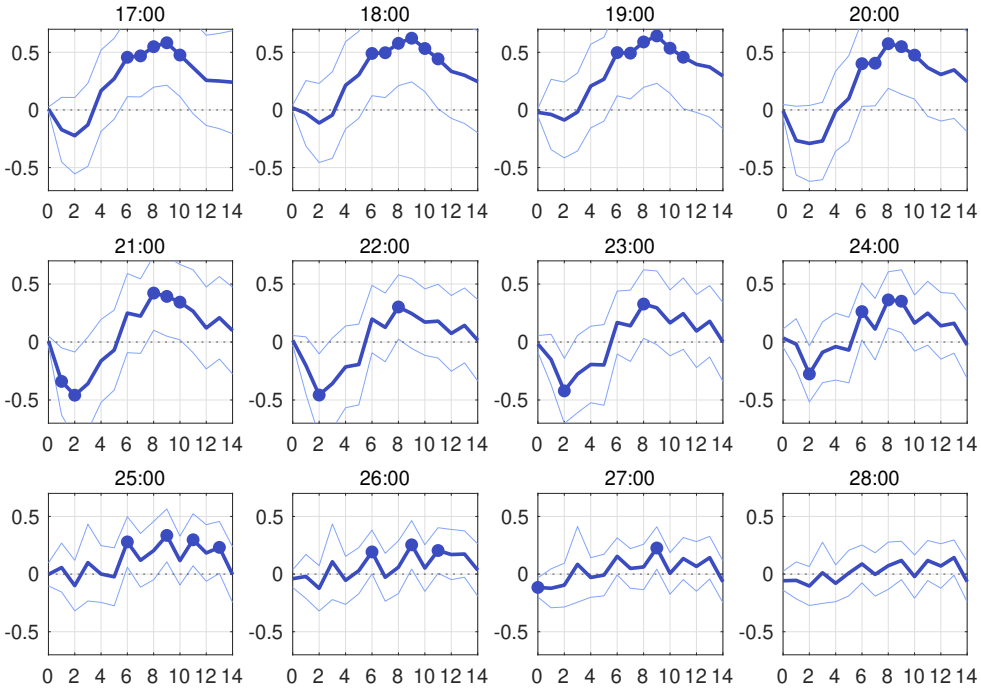
Second, we will look at a subset of MOQs that were submitted from the 200th Extraordinary Diet to the 207th Extraordinary Diet. These MOQs were submitted under the relaxed schedule as shown in Figures 2(a)–2(b).[15] Note that these MOQs were handled through the paperless system as well.

The top panel of Figure 12 shows the estimated responses under a tight schedule. Compared with the unconditional responses shown in Figure 7, we observe significantly earlier responses than those for the whole sample. Two or three working days after the shock the increases in the area population become significant.

[15]Note that we do not include the 199th Extraordinary Diet for the House of Councillors because all the MOQs are responded with delays.



(a) Responses under the Tight Schedule



(b) Responses under the Relaxed Schedule

Figure 12: Impact of Relaxing the Time Constraint

Note: Panel (a) shows responses under the tight schedule illustrated in Figures 1(a)–1(b), while panel (b) displays those under the relaxed schedule shown in Figures 2(a)–2(b). Vertical axes measure percentage changes in population. Horizontal axes measure the number of working days after an MOQ is submitted. Thick lines are point estimates, and thin lines represent ±2-standard-error bands. Dots indicate significant responses.

This is consistent with the tight schedule described in Section 2. Under the tight schedule, government officials must prepare responses within four full working days. The majority of the estimated increases in overtime stem from the congestion effect, rather than the direct impact of MOQs.

The bottom panel of Figure 12 presents the estimated responses under the relaxed time constraint. Based on the unconditional responses shown in Figure 7, the estimated responses show much stronger congestion effects, especially in the early evening. It takes six working days until the congestion effect becomes apparent. Under the relaxed schedule, government officials at most have six full working days until the practical deadline. Thus the estimated increases in overtime work are mainly due to the congestion effect.

We see decreases in the area population one or two working days after the MOQ shock, regardless of whether it is under a tight schedule or a relaxed schedule. The magnitude is greater for those under a relaxed schedule than for those under a tight schedule.

Overall qualitative patterns remain unchanged even when we account for different time constraints. The exact timing and magnitude differ depending on the time constraints government officials face. Upon receiving the MOQ shock, overtime work tends to decrease initially, and then it starts to increase and persists beyond the MOQ deadline.

5.5 Responses to the Wednesday Shock

The above discussion is slightly misleading, because the responses under the relaxed schedule reflect two changes: a relaxed schedule and a paperless system. To isolate the effect of introducing the paperless system, we take advantage of the fact that the time constraint for MOQs submitted on a Wednesday is unchanged, as mentioned in Section 2.2.

If we focus on the impact of MOQs submitted on a Wednesday and compare MOQs before and after the 200th Extraordinary Diet when the paperless system was introduced, we can infer the impact of shifting from a paper-based system to a paperless system. To this end, we estimate the following specifications:

$$p_{HH,t+h} = \alpha + \theta_{HH,h} q_t^w + \kappa_{HH,h} s_t q_t^w + \boldsymbol{\phi}'_{HH,h} \boldsymbol{x}_t + e_{t+h}, \tag{6}$$

where q_t^w represents the number of MOQs submitted on Wednesday and s_t is a dummy variable, which takes 1 if the date t is after October 4, 2019, the start of the 200th Extraordinary Diet. The coefficient $\kappa_{HH,h}$ captures the impact of introducing the paperless system.

Figure 13 plots $\hat{\kappa}_{HH,h} \times 100$. Some point estimates suggest that there is a decrease in MOQ-related overtime work under the paperless system. Most of them remain insignificant, however. This result is not conclusive, yet suggestive that the paperless system has not mitigated overtime work induced by the

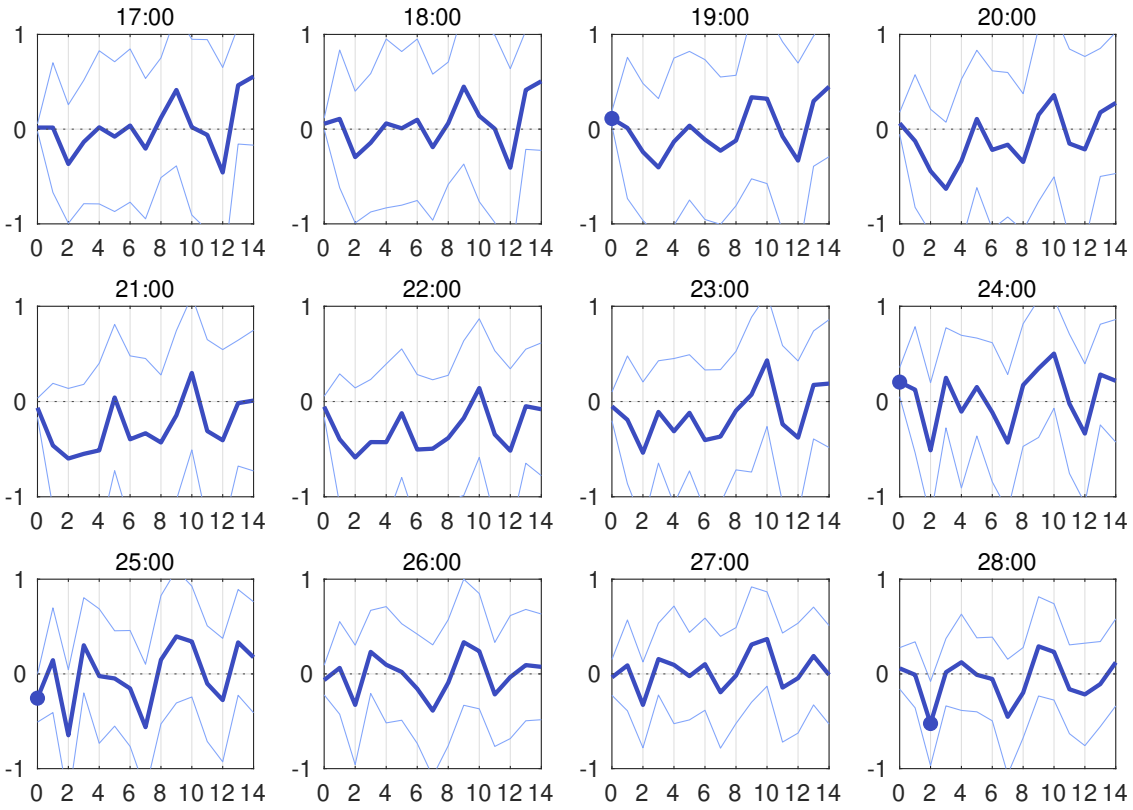


Figure 13: Impact of the Wednesday-MOQ Shock under the Paperless System

Note: Vertical axes measure percentage changes in area population. Horizontal axes measure the number of working days after an MOQ is submitted. Thick lines are point estimates, and thin lines represent ±2-standard-error bands. Dots indicate significant responses.

submission of the MOQs.

6 A Simple Model of Optimal Work Allocation

This section presents a theoretical model that can account for the observed responses following an MOQ shock. A noticeable aspect of the estimated responses may be that overtime work *decreases* one day after the MOQ shock, and then it increases gradually. We show that this pattern arises naturally because of the intertemporal optimization of working hours combined with an enforced task assignment in future periods.

Intuitively, upon receiving an irregular task such as an MOQ, workers foresee an increase in working hours in future periods. Tasks cannot be reallocated to the current period because of a rigid workflow, as outlined in Section 2. Nonetheless, as workers like to smooth their working hours to maximize their utility, given such an expected rise in future tasks, they choose to reduce the current working hours worked to prepare for a larger workload in the future. This turns out to be a suboptimal allocation. In the following subsections, we formally develop a mechanism by using a simple two-period model. We also extend the model to examine

dynamic consequences in a quantitative setting.

6.1 Irregular Task and Distorted Allocation in a Simple Two-period Model

We consider the intertemporal choice of working hours for an individual worker in a two-period deterministic model.[16] The lifetime utility of an individual worker is given by

$$u(L_1) + \beta u(L_2), \tag{7}$$

where L_t for $t = 1, 2$ is hours worked at time t, and $\beta \in (0, 1)$ represents the subjective discount factor. We assume the utility function satisfies $u' < 0$ and $u'' < 0$. Tasks are assigned exogenously every period. There are two types of tasks: regular and irregular. Regular tasks can be reallocated across time. We assume that irregular tasks have a hard deadline and must be completed within the period that is assigned.

The salient feature of the model is that the worker can work more or less to finish the total number of tasks assigned to the worker at time t. If she works more than the allocated time to complete the assigned number of tasks, it means that she helps her colleagues. If she works less than the allocated time to complete the assigned tasks, her colleagues help her finish her tasks. This feature is something analogous to lending and borrowing resources.

For each period, the worker faces the following constraint:

$$(1 + \phi)V_{t-1} + T_t + F_t = (1 + E_t)L_t + V_t, \tag{8}$$

where T_t and F_t are the number of regular and irregular tasks, respectively, E_t is the extra effort necessary to meet the deadline, and V_t represents carried-over tasks from t to $t+1$. When $V_t > 0$, there are unfinished tasks, which incur costs $\phi > 0$ in the next period (i.e., forgetting details of the remained tasks). If $V_t < 0$, she works more than the assigned tasks at t by helping her colleagues who have other tasks. This will be rewarded in the next period, when colleagues help her back. This is something analogous to the lending and borrowing of resources. Through this feature, regular tasks can be allocated across time. For simplicity, we assume $V_0 = 0$. Because all tasks need to be completed by the end of period 2, we have $V_2 = 0$.

It is important to emphasize that irregular tasks differ from regular tasks, because irregular tasks cannot be reallocated over time. Without this constraint, they are fundamentally identical. To meet the hard

[16] Our discussion is based on Hamano and Murakami (2022), who consider a more general setup.

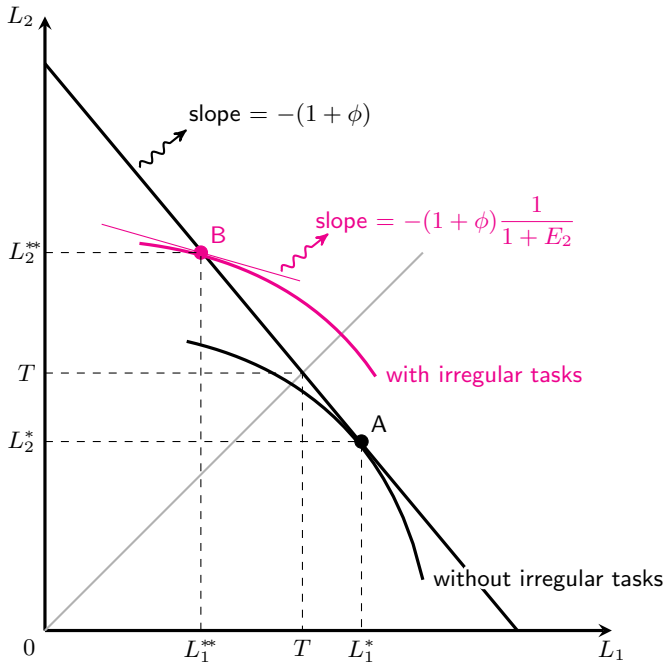


Figure 14: Equilibrium Allocation with and without Irregular Tasks

Note: The horizontal axis measures labor supply and the number of regular tasks in period 1. The vertical axis represents those in period 2.

deadline within the period, the worker needs to make extra effort such that

$$F_t = E_t L_t. \tag{9}$$

Note that additional effort is not required when there are no irregular tasks.

The worker maximizes her lifetime utility (7), subject to constraints (8) and (9). The optimality condition is given by

$$u'(L_1) = \beta(1+\phi)\frac{1+E_1}{1+E_2}u'(L_2). \tag{10}$$

It states that the current marginal utility of working is equalized with the future marginal utility. This is similar to the consumption-smoothing motive and the individual worker wants to smooth her hours to work.

In optimality condition (10), the presence of E_1 and E_2 is a source of intertemporal distortion. To see this point, Figure 14 depicts the equilibrium allocation of hours worked in this two-period setting. The downward-sloping line is the intertemporal resource constraint that incorporates (9). Curves concave to the origin are indifference curves that correspond to specific levels of the lifetime utility. The level of utility is higher when the indifference curve moves closer to the origin. For simplicity, suppose that $T_1 = T_2 = T$. Without irregular tasks (i.e., $F_1 = F_2 = 0$, and thus $E_1 = E_2 = 0$), the optimal allocation takes place at

point A in Figure 14 when $\beta(1+\phi) > 1$. At point A, we have $L_1^* > T > L_2^*$, meaning that the worker works more today than tomorrow, despite the same number of regular tasks over two periods. The indifference curve is tangent to the resource constraint because the marginal rate of substitution is equal to the slope of the resource constraint such that $\frac{u'(L_1^*)}{\beta u'(L_2^*)} = 1 + \phi$. This allocation is optimal, and provides the highest possible level of utility under the constraint.

The arrival of irregular tasks yields suboptimal allocations. This is contrary to the optimal allocation associated with regular tasks, which can be allocated across time. Now suppose that irregular tasks arise in the second period (i.e., $F_1 = 0$ and $F_2 > 0$, and thus $E_1 = 0$ and $E_2 > 0$). We find the new equilibrium allocation at point B in Figure 14, where the indifference curve intersects with the resource constraint and the slope of the indifference curve is flatter than the resource constraint, as $\frac{u'(L_1^{**})}{\beta u'(L_2^{**})} = \frac{1+\phi}{1+E_2}$. The equilibrium allocation with the irregular tasks in the second period leads to $L_1^{**} < L_1^*$ and $L_2^{**} > L_2^*$. The worker reduces her hours worked in the first period and increases them in the second period. Comparing points A and B, it is easy to see that this allocation is welfare decreasing.

It is important to emphasize that irregular tasks cannot be reallocated to the first period. In other words, the worker cannot work in advance to prepare for irregular tasks that will arise in the near future, even when arrival is fully anticipated. Intuitively speaking, to prepare for hard work in the future, she is obliged to reduce her current working hours to save her energy.

6.2 Simulation in a Dynamic Setting

The basic mechanism of our model remains valid even in an infinite-horizon setup. To examine the dynamic implications of our model, we perform numerical simulations with anticipated future increases in irregular tasks.

To obtain quantitative results, we assume the following utility function:

$$u(L_t) = -\frac{L_t^{1+\frac{1}{\psi}}}{1+\frac{1}{\psi}}, \tag{11}$$

where $\psi > 0$ controls the intertemporal elasticity of substitution of labor. To guarantee the stationarity of the model, we assume that the cost parameter for carried-over tasks ϕ is time-varying and follows

$$\phi_t = \phi + \vartheta[\exp(V_t - \bar{V}) - 1], \tag{12}$$

where ϕ is the steady-state value such that $\phi = \frac{1}{\beta} - 1$, $\bar{V}$ is the steady-state level of V_t, and $\vartheta > 0$ is a parameter that governs the feedback on ϕ_t from V_t. This specification is borrowed from the idea of the

debt-elastic interest rate in small-open economy models (Schmitt-Grohé and Uribe, 2003). As the individual worker owes her colleagues more than $\bar{V}$, there are higher costs that must be incurred.

The only source of uncertainty is the state of irregular tasks (i.e., constant regular tasks). Here, we consider two types of processes that characterize F_t: an anticipated increase and a gradual increase in future irregular tasks. First, we assume that irregular tasks F_t follow the AR(1) process:

$$F_t = \rho_F F_{t-1} + \varepsilon_{F,t-s}, \tag{13}$$

where $\varepsilon_{F,t-s}$ is an i.i.d. shock on irregular tasks that is learned s periods ago, and $|\rho_F| < 1$ controls the persistence of the shock. We set $s = 7$. That is, at $t = 0$ it is anticipated that the irregular task increases at $t = 7$.

Contrary to the one-time anticipated increase in irregular tasks, the number of irregular tasks increases gradually in the future. This would be more relevant for tasks such as MOQs. Following Barsky and Sims (2011), we assume

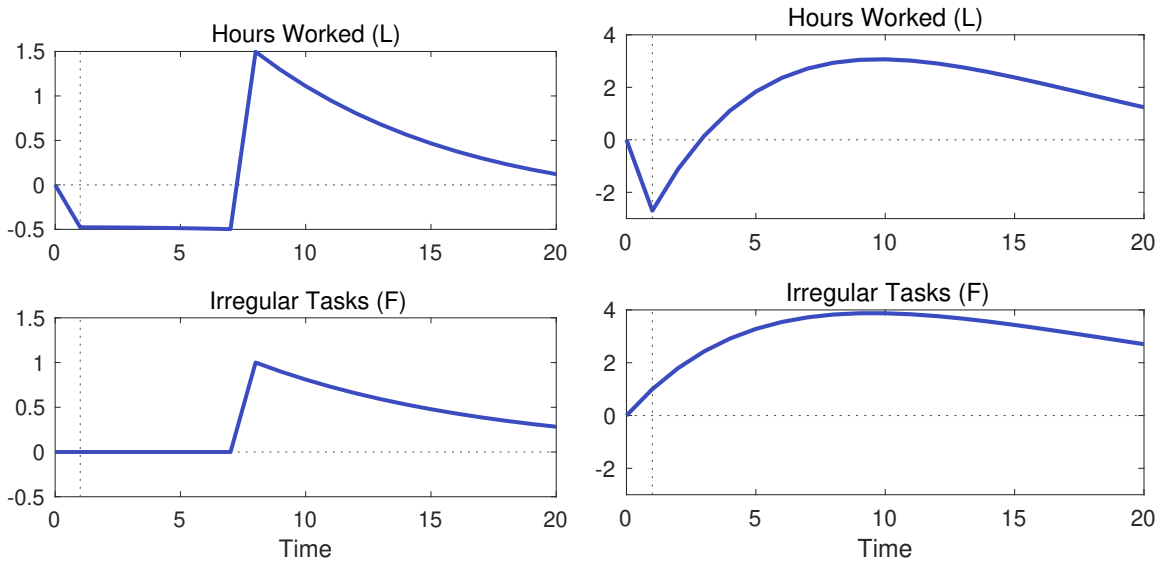
$$F_t = G_t + \rho_F F_{t-1}, \tag{14}$$

$$G_t = \rho_G G_{t-1} + \varepsilon_{G,t}, \tag{15}$$

where $\varepsilon_{G,t}$, is an i.i.d. shock and $|\rho_G| < 1$ controls persistence of G_t.

Figure 15 compares responses of hours worked with two different specifications of shocks to irregular tasks. The left panels show responses to the anticipated irregular task shock with (13). In particular, we assume that irregular task increases by 1% at $t = 7$, which is depicted in the bottom panel in Figure 15(a). The top panel of Figure 15(a) displays responses to this anticipated shock. Following this expected increase in F_t (and thus E_t), the worker reduces her labor supply from $t = 0$ to $t = 6$. Help from her colleagues enables this reduction in hours worked. The right panels of Figure 15 correspond to responses to the gradual increases in the irregular tasks that are modeled in (14)–(15). At $t = 1$, the worker realizes that the irregular tasks initially increase by 1%. As the irregular tasks are expected to grow gradually, the worker chooses to reduce her labor supply initially. In fact, the hours worked are lower than the steady-state values for three periods and start to increase later.

It is important to emphasize that the underlying mechanism for generating the initial decrease in hours worked is the distortion in the intertemporal allocation analyzed in the simple two-period model. Regardless of the type of shocks, increases in future irregular tasks trigger temporal reductions in labor supply to prepare for the hard work anticipated in the near future.



(a) Anticipated Shock (b) Gradual Increases in Irregular Tasks

Figure 15: Dynamic Responses of Hours Worked

Note: The horizontal axes represent time. The vertical axes measure percentage deviations from the steady-state values. The vertical dashed lines indicate $t = 1$ when the worker receives the shock. In this simulation exercise, we set $\psi = 2$, $\beta = 0.99$, $\phi = \frac{1}{\beta} - 1$, $\varphi = 0.0001$, and $\rho_F = \rho_G = 0.9$.

7 Survey Experiment

Despite their intentions, the institutional changes did not contribute to mitigating the overtime work of government officials, as we have seen in Sections 5.4 and 5.5. It is possible that the institutional changes affect something we do not observe in mobile location data. In particular, one possibility is that the quality of work done by government officials has changed, while leaving patterns of physical labor input unchanged.

To examine this possibility, we conduct online survey experiments.[17] It is challenging to gauge the quality of output produced by government officials. However, our simple survey experiment provides a way of testing the effects of institutional changes.

7.1 Experimental Design

To quantify the quality of output, we ask our respondents to read a set of administrative documents. The set of documents consists of two parts: questions from politicians (MOQs) and answers to the MOQs prepared by government officials. We ask them to evaluate the quality of the answers on a Likert scale (1 to 9). The subjective scores on the answers should reflect the quality of works done by government officials. We use the subjective scores as our outcome variable. Because the quality of the answer will depend on the difficulty of the question, we also ask them to evaluate the difficulty of dealing with the MOQs, and we control for the

[17] We obtain ethics approval from Kindai University (2023, Nov. 1: ECON23-05).

level of subjective difficulty.

In this study, we conduct two pilot experiments and a main experiment. In the first pilot experiment, we employ a within-subject design and the second one utilizes a between-subject design. In the within-subject design experiment, we ask each respondent to rate the two sets of administrative documents, both before and after the institutional changes. In the between-subject design experiment, we ask each participant to rate one set of documents, either before or after the institutional changes. After seeing the results from these pilot experiments, we decide to conduct our main experiment with the within-subject design, as we document below.

Our questionnaire consists of two parts. The first part is about the evaluation of administrative documents. We ask respondents to read a pair of the MOQ and the associated responses. Then, we ask them to evaluate both the difficulty of the MOQ and the quality of the response based on the clarity, but not on the respondents' subjective political preferences. In the within-subject design, we repeat such a set of questions twice. One is from before the institutional change and the other is from after the change. In the between-subject design, we randomly assign a set of questions, before or after the institutional change, to each subject. The second part asks six questions about basic information about respondents. We ask about their age, gender, educational attainment, reading habits, whether they are a main breadwinner, and political stance.[18]

7.2 Sampling

7.2.1 Sampling Frame

The target population of this survey is registered individuals aged from twenties to sixties living in Japan. Because this survey requires our respondents to read relatively long sentences for an internet-based survey where researchers do not have direct control over the participants, we restrict our participants to those with high school diplomas or higher. The sample is stratified on the cells of age and gender categories.

Additionally, we also screen participants based on their attention. On average, an adult Japanese person can read 600 characters per minute. From this information and the total number of characters read by respondents in our experiment, we can calculate the minimum amount of time each participant would spend answering the questionnaire, depending on the experimental condition to which each of they is assigned. We assume that respondents read Japanese at the average speed. We then drop those respondents whose completion time is faster than the required time from the study sample.

[18] In our main experiment, there are 10 questions. All of them are in Japanese. They are available upon request as supplemental materials that contain both original Japanese questions and their English translations.

7.2.2 Recruitment

To obtain an approximately representative sample of the Japanese population in terms of gender and age, we hire MyVoice Communications, Inc. to conduct the survey experiment. This local survey company has around 93,000 pre-registered subjects.

In order to avoid experimenter demand effects, we only inform participants that the purpose of the survey is to evaluate the quality of documents prepared by government officials and that it is conducted as academic research by researchers from Waseda University, Kindai University, and Gettysburg College. We secure the anonymity of responses and guarantee the freedom to quit the survey at any stage. We inform them that the expected time to complete the survey is approximately 15 minutes.

7.3 Selected MOQs and Associated Answers

In this subsection, we explain how we select a set of MOQs for subjective evaluations. First, we collect MOQs submitted during the 195th Diet and the 200th Diet. The former represents the right "before" the institutional changes and the latter corresponds to the right "after" the changes. Second, we compute the frequency of ministries and agencies that handle the "before" and "after" MOQs, which are shown in Figure 16 in the Appendix. Third, based on these distributions, we hand-pick 24 sets of the MOQs that were submitted before and after the institutional changes to replicate the distributions. Our criteria for selecting sets of MOQs are (i) that the word counts of MOQs and the associated response fall within a certain range so that cognitive burden by the respondents are not so different across different pairs assigned, and (ii) that they are concerned about similar topics, such as foreign policy and education. The list of the selected MOQs and corresponding ministries is shown in Table 4 in the Appendix and the URLs to the MOQs are summarized in Table 5 in the Appendix.[19]

7.4 Estimations of the Effect

Let an index $j \in \{1, \cdots, 24\}$ represent each pair of MOQs submitted before ($t = 0$) and after ($t = 1$) the institutional changes. Let $q_{i,j,t}$ denote the individual i's subjective evaluation of the quality of responses for MOQs pair j, which ranges from 1 to 9, with 1 being poor and 9 being excellent, before ($t = 0$) or after ($t = 1$) the institutional changes. Similarly, we define $d_{i,j,t}$ to represent the individual i's subjective evaluation of the difficulty of the MOQs to respond, which also ranges from 1 to 9, with 1 being difficult and 9 being easy, before ($t = 0$) or after ($t = 1$) the institutional changes. In assigning a set of MOQs for subjective variation, we randomize over j and the order of t.

[19] Because we could not find appropriate MOQs submitted during the 200th Diet, one MOQ comes from the 201st Diet.

In analyzing data from the within-subject design experiment, we assume the following model of quality evaluations by our respondents:

$$q_{i,j,t} = \alpha + \beta x_t + \gamma d_{i,j,t} + \boldsymbol{\delta}' \boldsymbol{m}_j + \boldsymbol{\kappa}' \boldsymbol{z}_i + \eta f_{i,j} + \theta f_{i,j} x_t + \varepsilon_{i,j,t}, \tag{16}$$

where x_t is a dummy variable that takes 1 after the institutional changes ($t = 1$), $d_{i,j,t}$ indicates the difficulty of the MOQs ranging from 1 to 9, m_j is a 12×1 vector of dummy variables that represent ministries handling the MOQ j, $\boldsymbol{z}_i$ represents a vector of control variables, $f_{i,j}$ is a dummy variable for the order effect, which takes 1 if the "after" questions come first, and $\varepsilon_{i,j,t}$ is an error term.

Using (16) and exploiting the panel structure of our survey data for the case of within-subject design experiment, we arrive at our main specification as follows:

$$\Delta q_{i,j} = \beta + \gamma \Delta d_{i,j} + \theta f_{i,j} + \nu_{i,j}, \tag{17}$$

where $\nu_{i,j} = \varepsilon_{i,j,1} - \varepsilon_{i,j,0}$, and $\Delta q_{i,j} = q_{i,j,1} - q_{i,j,0}$ and $\Delta d_{i,j} = d_{i,j,1} - d_{i,j,0}$ represent changes in the quality of responses and those in the difficulty of the associated MOQs, respectively.[20] The effects of institutional change on the quality of jobs done by government officials are captured by the constant term β.

With the data from the between-subject design experiment, where we do not need to worry about the ordering effect, the specification boils down to the following:

$$q_{i,j,t} = \alpha + \beta x_t + \gamma d_{i,j,t} + \boldsymbol{\delta}' \boldsymbol{m}_j + \boldsymbol{\kappa}' \boldsymbol{z}_i + \varepsilon_{i,j,t}, \tag{18}$$

where the coefficient β on x_t captures the effect of the institutional changes on the quality of works. We estimate (17) and (18) by using the ordinary least squares.

7.5 Results of Pilot Tests and Our Hypothesis

We conducted two pilot tests to calculate the sample size of our main experiment. The first one employed a within-subject design, and the second one was based on a between-subject design. The first pilot experiment with the within-subject design took place from December 1 to 4, 2023. The number of participants was 126. The second one with the between-subject design took place from December 22 to 25, 2023. The number of participants was 421.

As noted above, we drop respondents who do not take enough time to complete the survey in both cases, based on the minimum reading time required. As a result, our study sample consists of 47 observations for

[20] In our survey because each individual i only looks at a particular ministry, we could drop the j subscript.

Table 3: Summary of Estimates from Pilot and Main Surveys

(a) Pilot survey 1 (within-subject design)

	Estimates	SE	p-value
β (changes in quality)	0.75	0.39	0.06
γ (changes in difficulty)	-0.13	0.09	0.16
θ (order effect)	-0.71	0.55	0.21
$N = 47$ (original number of respondents = 126)			

(b) Pilot survey 2 (between-subject design)

	Estimates	SE	p-value
β (changes in quality)	0.45	0.26	0.09
γ (changes in difficulty)	0.12	0.06	0.04
$N = 218$ (original number of respondents = 421)			

(c) Main survey (within-subject design)

	Estimates	SE	p-value
β (changes in quality)	-0.37	0.34	0.28
γ (changes in difficulty)	0.01	0.09	0.94
θ (order effect)	0.35	0.46	0.45
$N = 82$ (original number of respondents = 223)			

the first pilot test and 218 for the second one.

The summary of the estimates from the pilot tests and the main survey is shown in Table 3. The first column shows the estimated coefficients, while the second and third columns show the standard errors and p-values, respectively. The last row of each panel shows the number of observations used in the estimation.

Panels (a) and (b) of Table 3 summarize the results from the pilot experiments. Based on the within-subject design experiment, we find $\hat{\beta} = 0.75$ with the standard error of 0.39. The estimate based on the between-subject design experiment is $\hat{\beta} = 0.59$ with the standard error of 0.26. Both of them are are statistically significant at the 10% level. With these results, we hypothesize for our main survey that the institutional changes improve the quality of work done by government officials.

After seeing the results, we decided to conduct our main experiment via the within-subject design, since it is more powerful than the between-subject design. As for the sample size calculation, since the effect of institutional changes on the quality of responses to MOQs is estimated with the constant term in equation (17), we can calculate the required number of observations for the main test via a one-sample mean test. In doing so, we assume the significance level of 5 percent and the power of 90 percent. The standard deviation of our outcome variable $\Delta q_{i,j}$ is 1.914, while the effect size is 0.75, as shown above. Since the mean of q before the institutional change is 4.53, $\hat{\beta} = 0.75$ corresponds to a 17 percent increase in the quality.

With the information, we obtain that the minimum sample size for us to detect a significant effect at the 5 percent level is 71. In addition, since we screen our respondents with the information of their attention, we have to multiply the number by 126/47, the inverse of the hazard rate of our pilot study. In the end, we

need around 200 participants for our main survey.

7.6 Results of Main Test and Discussion

Our main experiment took place during January 15–26, 2024. We repeated the same experimental procedure as in the first pilot test. Our study sample consists of 82, as opposed to our planned number of 71, out of the total number of respondents being 223.

As shown in panel (c) of Table 3, we find that $\hat{\beta} = -0.20$ with the standard error of 0.24. This is not statistically significantly different from zero. Although it is insignificant, the point estimate turns to be even negative. Even though we hypothesize that the institutional changes have improved the quality of work done by government officials based on the result of our pilot test, we do not find evidence supporting our hypothesis Development.

We do not find any evidence that both relaxing the time constraints and shifting from a paper-based system to a paperless system have material differences in how government officials deal with MOQs. The institutional changes do not mitigate overtime work and do not improve the quality of work done by them immediately.

There is a possibility that we could not find supporting evidence even when the reality is otherwise. There may be a time lag for the institutional changes to have material impacts. Since the timing of the institutional changes are close to the COVID-19 pandemic periods, we need to avoid the pandemic periods. At the same time, it is not ideal to compare a set of MOQs and replies to them that come from a distant time interval because the underlying political situation could be quite different.

8 Conclusion

This study investigates the impact of unexpected tasks on the overtime work of Japanese government officials using mobile location data and a local projection method. We find that an increase in MOQs initially reduces overtime work but leads to persistent increases, often extending beyond the MOQ deadline. This congestion effect highlights the broader implications of task allocation on workload management.

Our theoretical model demonstrates that the observed patterns can be explained by distortions in intertemporal task allocation, where workers reduce current hours to prepare for future tasks. This mechanism underscores the importance of considering dynamic responses in policy design.

Institutional changes, such as relaxing time constraints and adopting a paperless system, were intended to mitigate overtime work. However, our findings suggest that these changes had limited success in reducing overtime or improving the quality of work, as evidenced by our survey experiment.

These results have important policy implications. Politicians should carefully evaluate the trade-offs between transparency and administrative burden when designing systems like the MOQ. Future research could explore long-term effects of institutional changes, examine other types of tasks, or investigate the role of organizational culture in shaping overtime work dynamics.

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Appendix

A Selected MOQs

Table 4 lists all 24 pairs of MOQs before and after the institutional changes. We manually select these pairs such that a pair of MOQs shares a similar topic. Table 5 provides associated URLs for the selected MOQs.

Figure 16 shows fractions of MOQs that are submitted to the House of Representatives and handled by each ministry during the 195th Diet (Before) and the 200th Diet (After).

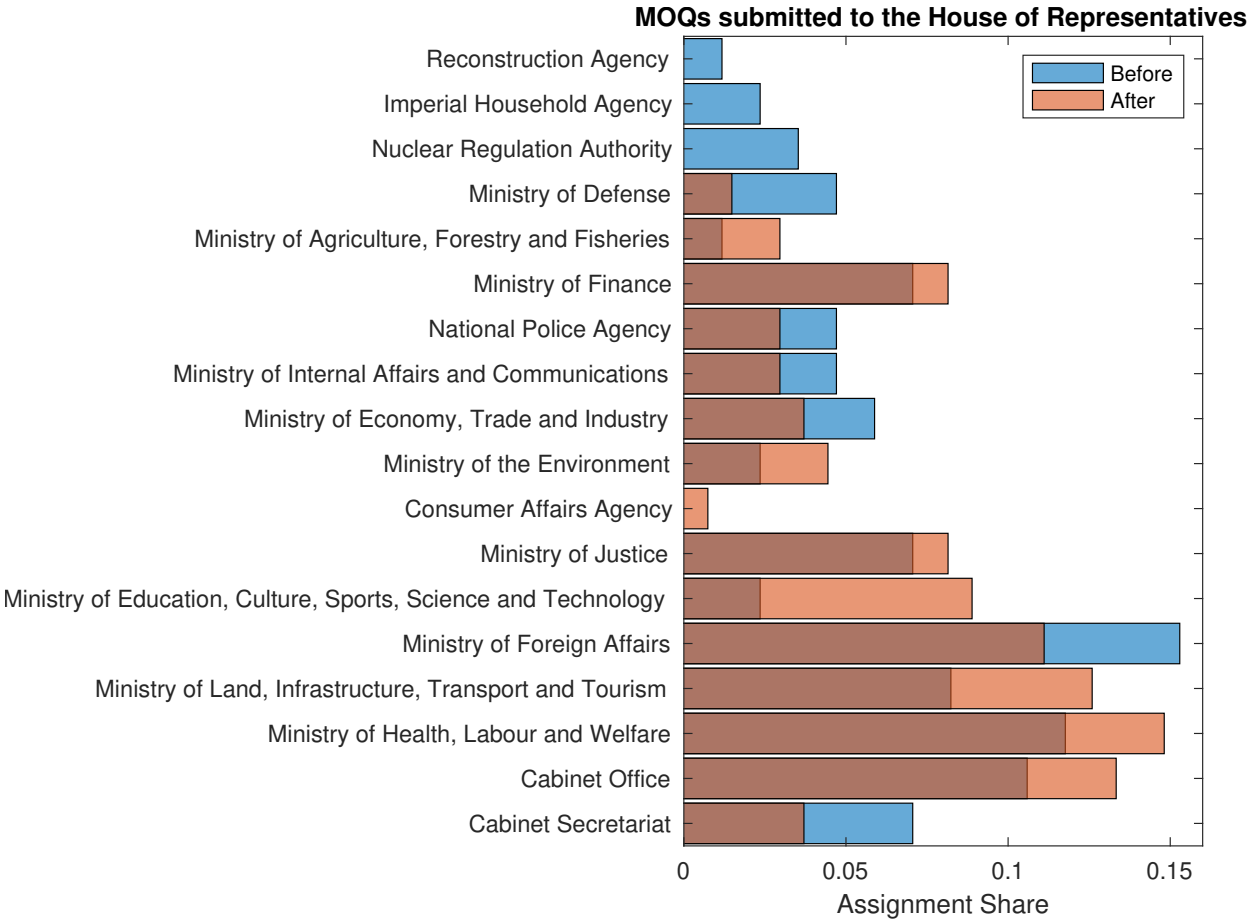

Figure 16: Distribution of Handling Ministries Before and After

Table 4: The Selected MOQs Used in the Survey

	Assigned Ministry	Topic	Before	After
1	Ministry of Finance	Monetary Policy	Question regarding the statement by a Bank of Japan deliberation committee member, "It is not a fact that the Bank of Japan bought stocks to raise stock prices."	Question about the Bank of Japan's Negative Interest Rate Policy
2	Ministry of Finance	Income Taxation Related	Question about the taxation implications of profits resulting from the use of Bitcoin.	Question about the review of individual income taxation
3	National Police Agency	Organized Crime	Question about promoting measures against organized crime.	Question about the definition of anti-social forces
4	Ministry of Internal Affairs and Communications	Firefighting	Question about the color vision examination for firefighter recruitment.	Question about compliance with the Fire Service Act
5	Ministry of Economy, Trade and Industry	Industrial Policy	Question about industrial promotion in Kitakyushu City.	Question about support for affected businesses in the industrial park in Kanazawa Ward, Yokohama, and the restoration of the seawall
6	Ministry of the Environment	Invasive Species	Question about the status of invasion and establishment of the Argentine ant in our country.	Question about amendments to the Invasive Alien Species Act
7	Ministry of Justice	Legal System	Question about the enforcement status of the amended Organized Crime Punishment Act.	Question about pardons in the Reiwa era
8	Ministry of Justice	Immigration	Question about the registration of births for children with both foreign national parents.	Question about the forced repatriation of North Korean UN sanctions violators
9	Ministry of Education, Culture, Sports, Science and Technology	Education	Question about school regulations that require hair color to be black.	Question about university public relations
10	Ministry of Foreign Affairs	President Trump's Visit to Japan	Question about the invitation of the opposition party leader to a dinner with the U.S. President.	Question about the expenses for various events during President Trump's visit to Japan
11	Ministry of Foreign Affairs	North Korea	Question about the legal significance of North Korean soldier defection incidents.	Question about humanitarian assistance to North Korea
12	Ministry of Foreign Affairs	Foreign Minister's Statement	Question about the understanding of the Japan-U.S. nuclear agreement in Foreign Minister Kono's press conference immediately after taking office.	Question about Foreign Minister Motegi's statements regarding the Japan-U.S. trade agreement appendix

Table 4: The Selected MOQs Used in the Survey (Continued)

	Assigned Ministry	Topic	Before	After
13	Ministry of Foreign Affairs	Information Disclosure	Question about amending laws to protect freedom of the press.	Question about the conditions for non-disclosure in information disclosure requests
14	Ministry of Land, Infrastructure, Transport and Tourism	Airport	Question about enhancing the functionality and utilization of Kitakyushu Airport.	Question about the early realization of a 3,000-meter runway at Kitakyushu Airport
15	Ministry of Land, Infrastructure, Transport and Tourism	Regional Revitalization	Question about the relocation of companies in the Tokyo metropolitan area and the strengthening of regional bases.	Question about the background of the amendment to the Remote Island Promotion Act
16	Ministry of Land, Infrastructure, Transport and Tourism	Tourism	Question about the taxation subjects for departure taxes.	Question about the second round of public input on the basic policy for specific integrated tourism facilities, including casinos
17	Ministry of Health, Labour and Welfare	Elderly Care	Question about the limitations on the provision frequency of "life assistance" in home care and the "relaxed standards" for "life assistance."	Question about the revision of the long-term care insurance system
18	Ministry of Health, Labour and Welfare	Labor	Question about the overview of the Work-Style Reform Plan.	Question about the mobility of specific skilled foreign workers in the construction field
19	Ministry of Health, Labour and Welfare	Child Rearing	Question about the "New Social Foster Care Vision."	Question about the need for training clinical forensic experts from the perspective of child abuse prevention and the government's efforts
20	Ministry of Health, Labour and Welfare	Healthcare	Question about abnormal behavior caused by antiviral drugs like Tamiflu.	Question about the response to regular vaccinations for human papillomavirus infection
21	Cabinet Office	Economy	Question about specific plans to achieve a surplus in the primary balance.	Question about the realization of economic stimulus measures based on the Japanese version of modern monetary theory
22	Cabinet Office	Public Documents	Question about retaining documents that have not been confirmed in the revision of the public document management guidelines.	Question about digital technology and public document management
23	Cabinet Office	Current Affairs	Question about the conservation of unmanned border island areas.	Question about personnel appointments in the Casino Management Committee
24	Cabinet Secretariat	National Diet Convening and Dissolution	Question about the request for the convening of the National Diet based on Article 53 of the Constitution.	Question about the dissolution of the House of Representatives with constitutional revision as a central issue

	URL for Before MOQs
1	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195028.htm
2	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195062.htm
3	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195052.htm
4	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195040.htm
5	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195050.htm
6	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195045.htm
7	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195012.htm
8	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195066.htm
9	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195020.htm
10	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195041.htm
11	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195057.htm
12	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195001.htm
13	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195044.htm
14	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195051.htm
15	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195071.htm
16	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195014.htm
17	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195068.htm
18	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195055.htm
19	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195035.htm
20	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195065.htm
21	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195011.htm
22	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195029.htm
23	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195082.htm
24	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a195010.htm
	URL for After MOQs
1	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200146.htm
2	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200095.htm
3	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200112.htm
4	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200093.htm
5	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200003.htm
6	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200124.htm
7	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200041.htm
8	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200138.htm
9	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200009.htm
10	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a201081.htm
11	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200136.htm
12	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200057.htm
13	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200060.htm
14	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200088.htm
15	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200053.htm
16	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200016.htm
17	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200054.htm
18	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200145.htm
19	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200122.htm
20	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200091.htm
21	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200068.htm
22	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200144.htm
23	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200090.htm
24	https://www.shugiin.go.jp/internet/itdb_shitsumon.nsf/html/shitsumon/a200062.htm

Table 5: List of URLs for Selected MOQs for the Survey