

COVID-19 and Lease Term Structure: Evidence from Malaysia Commercial Property Market

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Abstract

This paper examines for the first time the term structure of rent for commercial properties in Kuala Lumpur, Malaysia, for the period of 2018-2023. Regression analysis reveals an upward sloping term structure, suggesting that both tenants and landlords expect the short-term lease rate to increase at the time the lease agreements were signed. The positive impact is further strengthened during the COVID-19 period, indicating that the rental market participants anticipated the recovery of the rental market from the COVID-19 pandemic period. We also find that leases with longer terms offered a lower discount compared to shorter leases during the COVID-19 period. Subsample analysis, however, reveals that these COVID-19 related findings are only applicable to the shop office submarket.

Keywords: Term structure; rent; lease maturity; commercial properties; COVID-19; Malaysia

1.0 Introduction

Numerous studies have established the negative impact of COVID-19 on commercial property prices and rents. The three general conclusions from this strand of studies are that: (1) the degree of negative impact varies across property types and regions¹; (2) the negative impact has been short-lived with prices and rents rebounded in less than one year from their troughs²; and (3) the negative impact was mitigated by government interventions through various stimulus packages and loan moratorium periods.³ Despite offering important contributions in the literature, none of these papers have studied the negative impact of COVID-19 on commercial property rents include lease length as an explanatory variable in the rent equation.⁴

Meanwhile, there is a small strand of literature that examines the term structure of rent. The empirical work on this research question begins with the seminal work by Grenadier (1995) who lays down a set of hypotheses on the relationship between rent levels and the length of the lease using the expectation theory. Similar to the expectations about future interest rates, a

¹ Hospitality and retail markets suffered a notable decline in prices and rents during the peaks of the COVID-19 period. Industrial properties on the other hand were resilient to the impact of COVID-19. For examples, for the impact of COVID-19 on the prices and rents of commercial properties in the US, see Wen et al. (2022), Rosenthal et al. (2022), and Ling et al. (2020); for Malaysia, see Wong et al. (2023), and Sayuti et al. (2023); for Asia-Pacific region, see Allan et al. (2021); see Hoesli & Malle (2022) for European markets.

² Wen et al. (2022) for instance, documented the negative impact is however short-lived where the office rental market rebounded by 70% one quarter later from its trough. Wong et al. (2023) provide similar short-lived impact for the commercial property market in Malaysia.

³ For evidence of how fiscal support from central banks have contributed to the recovery of commercial real estate prices see Qureshi et al. (2022) and Wong et al. (2023).

⁴ Note that lease and rent are used interchangeably in this paper.

long-term lease is hypothesized to carry a higher rent than its short-term counterpart if the market expects the spot rent to rise in the near future. This expectation leads to an upward sloping term structure of lease and vice versa for a downward sloping term structure. Grenadier's (1995) theory is based on the probability of a future increase in short-term lease based on the ratio of spot rent and construction costs. The intuition is that if spot rent is well below the rent that is sufficient to stimulate profitable new development, the probability for future short-term rent rates to increase is high as demand increases. This leads to an upward sloping term structure.

The empirical evidence on the term structure of rent is scant and inconclusive at best. To the best of our knowledge, there are only four empirical papers that make rental term structure a major theme of their paper. Using 861 office leases in Stockholm, Sweden, in 1977 to 1991, Gunnelin & Söderberg (2003) provide partial support for the existence of term structure of office lease rate where the lease term variables are found to be significant in 7 out of their 15-year study period. The changes in signs of the lease length variable are consistent market expectations of the property market conditions then, i.e., an upward sloping (positive lease length coefficient value) during a recovering property market and downward sloping during an imminent property market crisis.

A follow up paper by Englund et al. (2004) using Swedish (for Stockholm, Gothenburg and Malmö) office lease data for the period of 1998-2002 however paints a different picture. None of the lease duration-year interaction of terms is found to be significant, implying that there is no clear term structure in Sweden as documented as found by Gunnelin & Söderberg (2003). Turning to the UK commercial property market, Bond et al. (2008) find a strong upward sloping office lease structure on a sample of office leases in London. The positive impact of lease duration on rent rate is constant over time where except for 1996, the interactive lease maturity-year dummies are statistically significant in each year during 1994-2004. More recently, Clark & Pennington-Cross (2016) provide evidence of an upward sloping lease term structure using the Chicago metropolitan area's industrial property leases. Consistent with the expectation hypothesis, the premium for longer lease is at its largest after the peak of business cycle where market players were optimistic about a recovery in the market soon⁵.

The current paper attempts to marry the literature on the impact of COVID-19 on the performance of commercial property with the literature on the term structure of rent. We do this by examining the interactive effects of COVID-19 on the term structure of commercial property rents in Kuala Lumpur, Malaysia. We contribute to the literature in the following three aspects. First, the number of leases (6,336) used in this paper is much larger than existing key papers on the term structure of rent discussed above. Second, we consider both office and retail leases in our analysis. Previous studies have mostly focused on office properties. Third, this paper represents a rare attempt to comprehensively consider the term structure of commercial properties of an Asian country.

The remainder of this paper is organized as follows: Section 2 outlines the data and method; Section 3 discusses the empirical results; and Section 4 concludes the study.

⁵ There is another small strand of empirical papers that include lease length as a control variable in commercial property rent equations. These papers include Benjamin et al. (1992), Wheaton & Torto (1994), and Webb & Fisher (1996). These papers, however, do not consider the variation of term structure of lease rate over time.

2.0 Data, variable description and method

The main dataset for this study is commercial lease transactions for Kuala Lumpur, Malaysia, during the period 2018 to 2023. The transaction data was obtained from *DataSense*, a leading property information provider in Malaysia. *DataSense* sources the lease transaction data from the Inland Revenue Board of Malaysia, a tax authority that is tasked to collect stamp duty on lease agreements. The dataset includes property lease details such as agreement dates, lease durations, property addresses, building types, rented sizes, monthly rent rates, and tenant and owner names. We do not have access to detailed lease information such as whether the lease contract is new or renewal from previous lease contracts, the existence, lease breaks, rent free period, and the rent indexation formula. GDP growth and base lending rate are obtained from the Department of Statistics Malaysia's and Data.gov.my's websites, respectively.

Table 1 shows the descriptive statistics of variables used in the regressions. The average lease length is 22 months. This is slightly lower than Sweden's office lease length of 29 months and 37-39 months, as documented by Gunnelin & Söderberg (2003) and Englund et al. (2004) respectively. This is, however, way below London's office average lease length of 14 years reported by Bond et al. (2008). The discrepancy is probably due to the inclusion of only large leases with large rented space in Bond et al. (2008). The average occupied by tenants in Bond et al.'s (2008) sample is 33,239 sq. ft. versus 3,653 sq. ft. in Englund et al. (2004) and this paper of 2,834 sq. ft. The average monthly rent rate of RM11,079 (USD2,570)⁶ is much lower than USD52,566 in Stockholm, Sweden (Gunnelin and Söderberg, 2003).

Turning to the dummy variables, 38% of the leases were signed during the COVID-19 period defined as the period from the beginning of Malaysia's first nationwide lockdown (Movement Control Order 1.0) on 18 March 2020 to the expiry of last nationwide lockdown (Full Movement Control Order) on 14 June 2021. The timeline of our sample period and the COVID-19 period are illustrated in Figure 1. Approximately 82.8% of the leases are office leases (office lot, shop office and terrace office)⁷ with the remaining 17.2% as retail leases (shophouses). Average quarterly GDP growth during the study period is 0.2% (8% per annum). The range is wide from -15.7% to 21.14% due to the impact of COVID-19. The monthly base rate ranges from 2.42% to 3.93%.⁸

Table 1: Descriptive statistics

	N	Mean	Median	Std. Dev	Min	Max
Lease length (months)	6336	21.98	24.00	10.67	1	252
Rent (RM)	6336	11,079	4,290	21,190	357	14,7441
Leased size (sq.ft)	6336	2,834.36	1,387.60	5,904.22	53.36	45,374.47
COVID (0,1)	6336	0.383	0	0.486	0	1
Office lot (0,1)	6336	0.280	0	0.449	0	1
Shop office lot (0,1)	6336	0.406	0	0.491	0	1
Terrace office	6336	0.142	0	0.349	0	1
Shophouse (0,1)	6336	0.172	0	0.377	0	1

⁶ Based on the exchange rate of MYR1 = USD0.2320 on 29 August 2024.

⁷ Office lots are office units located within large multi-storey buildings. Shop offices, as their names suggest, are commercial units that combine commercial and office spaces. Terrace offices are landed properties that are built side-by-side each other. Shop houses are commercial buildings that serve both residential and commercial business needs.

⁸ The base rate is pegged to Malaysia's overnight policy rate, the minimum interest rate at which banks lend money to each other.

Quarterly GDP growth	6336	0.244	1.844	6.76	-15.7	21.14
Monthly base lending rate	6336	2.99	2.68	0.57	2.42	3.93

Notes: This table tabulates the descriptive statistics of all variables used in the regression. The total number of observations is 6336.

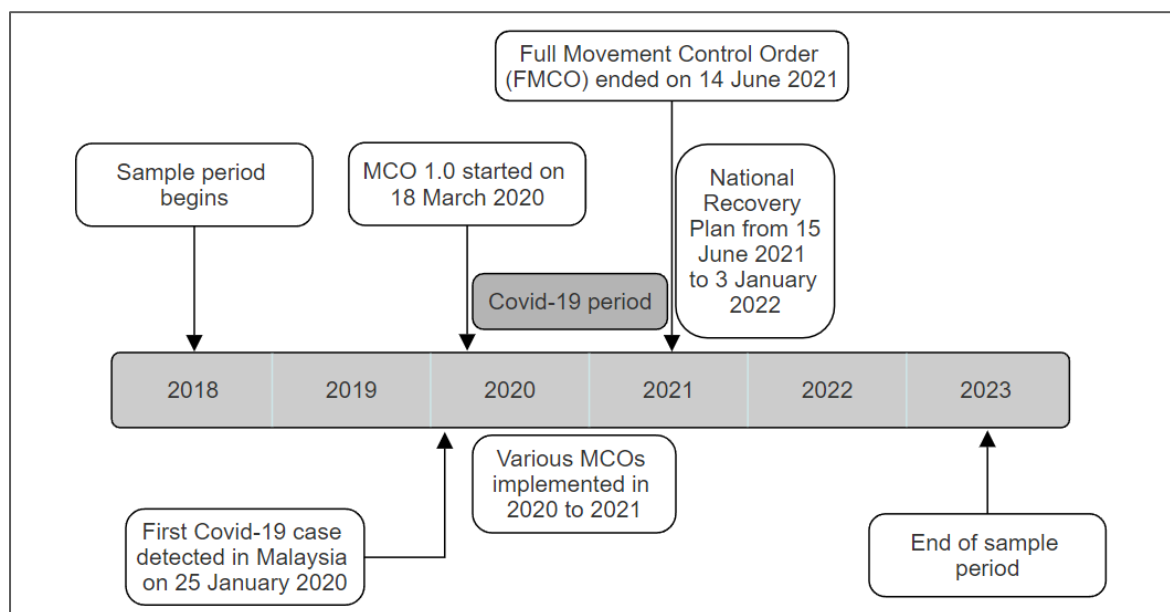


Figure 1: COVID-19 period during 2018 to 2023

Table 2 shows the distribution of leases by lease length and year of origination. In line with Gunnelin and Söderberg (2003), leases are found to be centered around 1-3 years. In the context of Malaysia, the low number of leases beyond 3 years is likely driven by the avoidance of the compulsory registration of lease agreements on the property title for leases with a lease term greater than 3 years.⁹ Landlords in Malaysia are generally reluctant to have the lease agreement endorsed on the property title. The common practice is to structure a 3-year lease with a renewal option.¹⁰ There was a surge in leasing agreements during the peak of the COVID-19 pandemic in 2020. A plausible explanation for this phenomenon was the downsizing or optimizing activities engaged by tenants during this period of uncertainty. A tenant could have negotiated with the new or existing landlords for a cheaper rent with shorter tenure to maintain operating flexibility.

Table 2: Lease maturity length by year of origination (2018-2023)

	Lease Length (Month)						Grand Total
	1-12	13-24	25-36	37-48	49-60	> 60	
2018	62	48	29	0	1	0	140
2019	329	383	261	2	4	2	981
2020	982	881	562	9	4	3	2441
2021	142	151	96	7	0	0	396

⁹ In Malaysia, renting with duration up to 3 years is known as ‘tenancy’ while those more than 3 years rent term is known as ‘lease’. Under Malaysia’s National Land Code, all leases have to be registered, failing which a lease is considered to be void.

¹⁰ According to a real estate agent with experience in the office sector in Kuala Lumpur. This reluctance arises because a registered lease protects lessee from the risk of eviction following the change of property ownership at the expense of the new property owner’s flexibility. This type of protection does not apply to unregistered lease (≤ 3 years).

2022	520	355	251	13	2	1	1142
2023	419	561	248	1	2	5	1236
Grand Total	2454	2379	1447	32	13	11	6336

Notes: This table tabulates the lease maturity length of commercial properties in Kuala Lumpur, Malaysia during the 2018-2023 period. The lease lengths are measured in months.

Our regression model is designed in the spirit of Gunnelin and Söderberg (2003). We assume a linear relationship between lease duration and contracted rent. The regression model used is specified as below:

$$\begin{aligned} \ln(\text{Rent}_i) = & \alpha_0 + \beta_1 \ln(\text{Lease Length}_i) + \beta_2 \text{COVID} - 19 \text{ Period}_t \\ & + \beta_3 \ln(\text{Lease Length}_i) * \text{COVID} - 19 \text{ Period}_t + \beta_4 \ln(\text{Size}_i) \\ & + \sum_{i=1}^I \beta_5 \text{Property Type Dummy}_i + \beta_6 \text{GDP Growth}_t + \beta_7 \text{Interest Rate}_t \\ & + \sum_{i=1}^I \beta_8 \text{Postcode Dummy}_i + \sum_{i=1}^I \beta_9 \text{Year Dummy}_t + \varepsilon \end{aligned} \quad (1)$$

where $\ln(\text{Rent})$ is the contracted initial rent payment for individual leases, while $\ln(\text{Lease Length})$ is the contracted length of individual leases in months. COVID-19 Period is a dummy variable, which takes the value of one from 18th March 2020 to 14th June 2021 and zero otherwise. The control variables are $\ln(\text{Size})$, Property Type Dummies, GDP Growth, and Interest Rate. We also include Postcode and Year Dummies to control for locational and year effects on each lease contract. The key variables of interest in this study are Lease Length, COVID-19 Period and the Lease Length-COVID-19 Period interaction term. A significant lease length variable will support the existence of a term structure of rent in the Malaysian commercial property market. The positive (negative) and significant value of lease length's coefficient value will support the upward (downward) sloping term structure of rent. The COVID-19 dummy and its interaction with lease length allow us to reveal the leasing strategies adopted by market players during period of extreme uncertainty. All else being equal, landlords will prefer a longer lease that help to reduce uncertainty in future cash flow expectations. Tenants, on the other hand, will prefer a shorter lease to maintain flexibility during periods of uncertainty. In order to entice tenants committing into a lease agreement, landlords will need to offer rent at a significant discount during the COVID-19 period and an additional discount for those tenants that are willing to commit to a longer lease. We therefore hypothesize the COVID-19 dummy and its interaction with lease length to be negative and significantly related to rent rates.

The COVID-19-Lease Length interaction term could also capture the variation of term structure during period of uncertainty. The expectation of an impending market recovery during the COVID-19 period could lead to an upward sloping term structure. This leads to a positive and significant COVID-19-lease length interaction term variable.

3.0 Regression results

We formally examine the impact of the existence of term structure and its interaction with COVID-19 dummy in a multivariate framework as shown in Equation (1). Model 1 is the base model. Model 2 expands the specification to include *Log (Lease length) * COVID Period* interaction term. Models 3-6 estimate separately the regression by property types. We control locational fixed effects through postcode dummies and time effects through year dummies.

Lease length is positive and strongly related to rent rate across all regression specifications. This supports the presence of an upward sloping term structure of commercial rent in Kuala

Lumpur, Malaysia. This finding suggests that market players expect the short-term rent to increase during the study period. Focusing on Models 1 and 2, COVID period dummy is negative and significantly related to rent. The magnitude of the coefficient value suggests that leases signed during the COVID-19 period are 18.7% lower than leases signed during the non-COVID-19 period. The significant positive *Log (Lease length) * COVID Period* interaction term suggests that increasing in lease length during the COVID-19 period leads to a lower discount.

This is contrary to our expectation of lower rent for tenants that are willing to commit to a longer lease. This finding, however, suggests that landlords view the discount given during the COVID-19 as hefty and temporary. They were reluctant to sign into long-term leases at the low spot rent during the COVID-19 period. This is consistent with the expectation hypothesis mentioned earlier, where term structure is positive (upward sloping) during the low point in the economy where recovery is imminent.

Consistent with Gunnelin and Söderberg (2003), leased space (Size) is positive and strongly related as rent is proportional to the number of square feet rented. The base case for the property type dummies is terrace office. The regression results revealed that the shop office's rent is significantly higher than the terrace office. The R² value of 43% is comparable with Bond et al. (2008) of 45% but significantly below Gunnelin and Söderberg (2003) of 70%.

Next, we conduct subsample analysis by property types (office lot, shophouse, shop office, and terrace office). As shown in Models 3-6, *Log (Lease length) * COVID Period* interaction term and the COVID-19 dummy are only significant in a sample of shop office lot leases. This implies that the discounted rent we observed in the overall sample during the COVID-19 only happened in the shop office lot submarket. The insignificant *Log (Lease length) * COVID Period* interaction term in 3 out of 4 subsamples suggests the significant positive *Log (Lease length) * COVID Period* interaction term documented in the full sample is more likely to be driven by leasing strategy consideration (i.e., signing of a longer lease at a lower discount during the COVID-19 period) rather than market-wide expectations.

4.0 Conclusion

This paper provides the first look at the term structure of rent in Kuala Lumpur. Taking advantage of the large commercial lease dataset from *DataSense* during 2018-2013, we show for the first time the existence of an upward sloping term structure in the Malaysian commercial property market. The positive incremental effect of COVID-19 on the term structure of rent is however limited to the shop office subsector. The upward sloping result during the COVID-19 period could be driven by two plausible channels. First, the expectation channel, where the market players expect an imminent increase in short-term future rent from the recovery of the COVID-19 pandemic. Second, the leasing strategies channel where landlords offer a lower discount to tenants that signed into a longer lease as the rent was already at its low point.

The second channel points to a potential angle that has never been comprehensively considered in term structure literature. Future research can consider the modelling rent and lease length decisions within a simultaneous decision framework. These decisions are likely to be jointly determined by both tenants and landlords. While Bond et al. (2008) mentioned the use of this method in their paper, they did not report the results since the test served merely to address the endogeneity of the lease length variable in their rent equation.

Table 3: Linear regression results for Eq (1)

	(1)	(2)	(3)	(4)	(5)	(6)
	Log (Rent)	Log (Rent)	Log (Rent)	Log (Rent)	Log (Rent)	Log (Rent)
	Overall	Overall	Shop office	Office lot	Terrace office	Shop house
Log (Lease length)	0.347*** (0.023)	0.299*** (0.029)	0.283*** (0.047)	0.254*** (0.052)	0.430*** (0.068)	0.370*** (0.063)
Log (Lease length) * COVID Period		0.129*** (0.047)	0.160** (0.072)	0.053 (0.087)	-0.060 (0.126)	0.094 (0.107)
COVID Period	-0.187*** (0.065)	-0.568*** (0.151)	-0.911*** (0.241)	-0.080 (0.280)	0.047 (0.395)	-0.440 (0.361)
Log (Size)	0.450*** (0.010)	0.450*** (0.010)	0.442*** (0.016)	0.552*** (0.019)	0.359*** (0.031)	0.204*** (0.025)
Office Lot	0.015	0.018				
Shophouse	-0.042	(0.041)				
Shop Office	0.072*	0.069				
	-0.043	(0.042)				
Shop Office	0.551***	0.552***				
	-0.039	(0.038)				
GDP Growth	-0.001	-0.001	0.004	-0.002	-0.001	-0.007*
	-0.002	(0.002)	(0.003)	(0.004)	(0.004)	(0.004)
Base Rate	-0.016	-0.011	-0.169*	0.163	-0.026	0.072
	-0.054	(0.053)	(0.095)	(0.099)	(0.109)	(0.106)
Constant	3.667***	3.744***	4.892***	2.483***	3.902***	5.239***
	-0.265	(0.266)	(0.468)	(0.487)	(0.600)	(0.553)
Observations	6,336	6,336	2,571	1,775	900	1,090
R-squared	0.430	0.431	0.433	0.570	0.373	0.272
Postcode fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes: This table tabulates the regression results for Eq (1). The dependent variable is Log (Rent), the monthly rental in log values. The key independent variables are Lease Length, COVID Period, and the interaction term of Lease Length and COVID Period. The control variables are the Size of the leased space, the property type dummy, quarterly GDP growth, and monthly base rate. Postcode and year fixed effects are also included in all models. Standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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