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Original Research Article

The Existence of Common Factors of Illiquidity on the Regional Securities Exchange

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Abstract

The purpose of this article is to test the existence of the systematic illiquidity component on the Regional Securities Exchange (Bourse Régionale des Valeurs Mobilières). To achieve this goal, we used a time-series analysis of shares listed on the BRVM (2000-2020). The Method of Ordinary Least Square and Generalized Least Square are used to verify the existence of this component. The findings support the conclusion that there exists a systematic component of illiquidity, specifically indicating that market illiquidity concurrently affects the illiquidity of equities.

Keyword: Liquidity, a Common Liquidity Factor, Commonalities, Equity, Stock Market, BRVM.

1. INTRODUCTION

Over the past decade, the literature on the microstructure of financial markets has seen an expansive development on the systematic property of liquidity. This is part of a new field of research known as "commonality in liquidity. This term was first coined by Chordia, Roll and Subrahmanyam (2000). According to these authors, it refers to the phenomenon of time series (time series) in liquidity due to common fundamental determinants across stocks. According to Brockman and Chung (2002), the common factor of liquidity refers to the fact that the liquidity of a firm is at least and partly determined by market factors and its empirical manifestation is the co-movement between individual and market liquidity over a period.

On the NYSE, Chordia, Roll and Subrahmanyam (2000) justify the existence of the common liquidity factor. As a result, they show that stock liquidity measures co-change significantly following a change in market liquidity. Using the quoted spread, effective range and quoted depth as proxies for individual stock liquidity, they find that market liquidity is a significant determinant of individual stock liquidity. In addition to these three authors, Huberman and Halka (2001), Hasbrouck and Seppi (2001) investigate the existence of the common liquidity factor in the same market using different approaches. But Hasbrouck and Seppi do not confirm this existence, if at all, only under certain conditions at very low or even negligible proportions. Fabre and Frino (2004) on the Australian stock market show the absence of a co-movement between the liquidity of the shares and that of the market, hence the non-existence of the common factor of liquidity on this stock market. Similarly, Bouzia and Cherkaoui (2020) justify the inexistence of the systematic component of liquidity in the Moroccan equity market. These mixed results further push researchers to conduct research on this topic on various markets taking into account their specificity. Thus, the BRVM, the first successful regional stock exchange in the world located in West Africa deserves such a study. This, in the concern to know the real situation which prevails on this subject on this stock exchange considering the importance of the systematic component of liquidity as a factor of risk to be evaluated (Archarya and Pedersen, 2005) and the fact that the investors holding the financial assets will require a premium of liquidity because they expose themselves to this risk. Hence, the objective of this paper is to determine the reality of the common factors of liquidity i.e. to test the existence of the systematic component of liquidity through an empirical study on the BRVM.

The remainder of this article is organized into three sections. The first section presents a review of the literature on the existence of common factors of liquidity. The second section highlights the methodological approach adopted and the presentation of the results is the subject of the third section.

1. State of the Art on Common Liquidity Factors

Liquidity has long remained explored in the financial literature from an individual perspective. However, its absence during the Asian crisis of 1997-1998 motivated financial researchers to explore its systematic component (Tissaoui *et al*., 2015). It was not until the 2000s that the first empirical study on this systematic component emerged on the NYSE stock market with the work of Chordia, Roll and Subrahmanyam. Studies on this area of research are done on several markets with different techniques.

Chordia, Roll, and Subrahmanyam (2000) explore the interactions among liquidity measures from quoted data and suggest that liquidity is not just an attribute of an individual asset, but that measures of stock liquidity co-vary among themselves. Even after enumerating individual determinants of liquidity such as trading volume, volatility and price, the common factors remain significant and material. In their work, they give an important role to market portfolios. They adjust their research by adapting the market model to liquidity by substituting the return on securities with the variation of the different liquidity proxies of 1169 stocks listed on the NYSE during 1992. They estimate the coefficient (beta) of liquidity and find that it is significantly different from zero for almost 30 to 35% of the stocks listed on the NYSE. Consequently, the depth and bid-ask spread are significantly affected by the variation in market liquidity. They determine that there is an industrial component to liquidity and conclude that common factors are present in the latter.

Some authors, such as Brockman and Chung (2002) and Caroline-Fournier (2003), also conclude that there are common factors of liquidity on the Hong Kong stock market and the Paris stock market respectively, using the methodology of Chordia, Roll and Subrahmanyam (2000).

At the same time, other methods have been implemented to test for the existence of common liquidity factors. Huberman and Halka (2001) also pointed out that most current theories focus on the individual liquidity of different securities; little can be learned from these theories about variations in liquidity that affect several securities simultaneously. They reason that the liquidity of different securities varies over time and in cross-section, and have shown that this variation has a common component. To statistically detect the presence of a systematic component of liquidity, they estimated the autoregressive structure of each of the four liquidity determinants: spread, spread/price ratio, depth in quantity, and depth in value (dollar), to derive a series of residuals of autoregressive processes. These innovations are highly correlated for each determinant of liquidity, indicating the presence of the common component of liquidity. They reach the same conclusions as Chordia *et al*., (2000).

Hasbrouck and Seppi (2001) point out that focusing on individual assets has led researchers to be ignorant of the most fundamental facts about interactions between assets. Thus, they also argue for shifting the focus of research from the analysis of individual assets to the analysis of variations between assets. They use principal component analysis and canonical correlations to capture this through the use of three sets of data calculated on the 30 DJIA stocks in 1994: returns, order flow and liquidity. They show common components for order flow and returns, but the results for liquidity are very modest and only allow us to affirm the existence of common factors for liquidity under certain conditions. While there is strong evidence of common factors in order flow and stock returns, the evidence of common factors in liquidity measures is not significant.

The absence of common liquidity factors in Hasbrouck and Seppi's (2001) study may be due to their small sample size of only 30 DJIA stocks (Brockman and Chung, 2002). The latter construct an index similar to Hasbrouck and Seppi using four large companies in the Hong Kong market, each consisting of seven industries. They use the methodology of Chordia *et al*., (2000) in their study with a sample of twenty-eight (28) companies. They find a strong presence of common liquidity factors in this financial center.

Coughenour and Saad's (2004) use a combined approach of the favorable elements of Chordia *et al*., (2000) and Hasbrouck and Seppi (2001) and show that individual stock liquidity co-varies with market liquidity on the NYSE. For each measure of range (quoted range, relative range), more than 90% of the market liquidity betas are positive and statistically significant. These results indicate the presence of the common liquidity factors at a higher proportion than previous studies.

Martinez *et al*., (2003) extended the empirical work on the existence of common factors of liquidity while including the case of the Spanish market. In their study based on the relationship between the valuation of financial assets (stock price formation process) and systematic liquidity risk, they confirm that common liquidity factors also exist in this market. The work of Archarya and Pedersen (2005) on the NYSE and AMEX through the implementation of LCAPM is in line with this idea. In this model, the authors present the covariance between market liquidity and the liquidity of individual stocks.

Henker and Martens (2004) try to detect the presence of common liquidity factors by using the spread cost decomposition model. In the latter, the spread arising from a trade can be decomposed into the cost of adverse selection, the stock-specific inventory cost, the order processing cost and the cost component of demand pressure and buying all stocks in the market. They find to a significant proportion that the range (spread) is explained by buying and selling pressure in the market, therefore provided strong evidence of common liquidity factors.

Brockman and Chung (2009) conduct a more comprehensive study on 47 stock markets. Using the approach of Chordia *et al*., (2000), these authors confirm that in most of the stock markets in their sample, stock liquidity measured by the "Spread" and "Dephts" is significantly influenced by market liquidity. These authors point out the existence of a strong systematic component in the Asian emerging stock markets when liquidity is measured by the "Spread", whereas in the North American stock markets, this strong component is observed rather with the "depths".

Zichao Zhang *et al*., (2011) examine four hypotheses regarding common liquidity factors in Chinese stock markets:

- H_1 market liquidity determines the liquidity of individual stocks;
- H_2 liquidity varies with firm size;
- H_3 liquidity by industry affects the liquidity of individual stocks differently;
- H_4 the common liquidity factor has an asymmetric effect.

These authors carry out their study over a period of two (02) years, more precisely on the stock market of Shanghai and Shenzhen with respectively 34 and 48 million transactions. Using the methodology of Chordia *et al.*, (2000), they find the strong presence of common factors of liquidity on these markets. This study shows that liquidity by industry is more important in explaining the liquidity of individual stocks, no evidence of the size effect and finally an asymmetry effect of market liquidity on the liquidity of individual stocks.

Karolyi *et al*., (2012) used the daily data of 27,447 stocks from 40 developed and emerging markets during the period from January 1995 to December 2009. They showed the existence of the common liquidity factors. They were very high during the period of high market volatility.

Syamala *et al*., (2014) examined the existence of common liquidity factors in emerging equity and option markets. Their results concluded that market liquidity influences stock liquidity even after controlling for specific variables associated with stocks.

Tissaoui *et al*., (2015) use the methodology of Chordia *et al*., (2000) on a sample of thirty-eight (38) stocks that were listed continuously on the Tunisian stock market during the period of October 2008 to June 2009 and confirm the existence of common liquidity factors in this market. On a sample composed of 105 stocks listed on the Saudi Stock exchange (Tadawul stock market) from January 2008 to December 2014, Tissaoui *et al*., (2018) also use the market model to document a strong presence of common liquidity factors in this market.

Miraïlles *et al*., (2015) motivated by the growing literature about stock liquidity and their involvement in the stock price determination process, focus on the existence and identification of the latter in the Portuguese stock market (Euronext Lisbon Stock Exchange). These authors to test the existence of common factors of liquidity in this market use monthly data from the period of January 1988 to December 2011 and several measures of liquidity (bid-ask spread, turnover, trading volume and the proportion of Zero return). Following the methodology of Chordia *et al*., (2000), these authors show some evidence of common liquidity factors in the Portuguese market when the proportion of Zero return is used as a measure of liquidity.

Bouzia and Cherkaoui (2020) exploit a daily database of 73 stocks listed on the Casablanca Stock Exchange, spread over a period of 8 years (from the first of January of the year 2012 until the end of December of the year 2019. Referring to the model of Chordia *et al*., (2000), they reject the hypothesis of the existence of the systematic component of liquidity on this stock market.

Foran *et al*., (2015) investigate the existence of the systematic liquidity component in the UK market. They use daily data from this market firm over the period from January 1991 to December 2013. To test the existence of the common liquidity factors, these authors used principal component analysis (PCA), Chordia *et al*., (2000) model and used four liquidity indicators: quoted range, relative range, Amihud illiquidity ratio and turnover. Their results using both approaches and all the liquidity indicators used show a strong presence of common liquidity factors on this stock market.

From all the above (more precisely from the state of controversy about the existence of the common factor of liquidity) and in the concern to know the reality that prevails on the first regional stock exchange of the world (BRVM) that we formulated the following hypothesis:

H: The illiquidity of the market simultaneously influences the illiquidity of the shares listed on it.

It is therefore appropriate to present the methodological framework for testing the hypothesis thus formulated against the facts.

2. METHODOLOGICAL APPROACH OF THE STUDY

This section presents the sample and the methodology used in this study.

2.1. Data Source and Study Sample

The data used in this work are of secondary source and come from the financial database of the BRVM. They are quantitative in nature and provide information at daily frequency on the volume, value and number of transactions for each security from September 1998 to December 2021 on the one hand, and the annual financial statements relating to companies listed on the BRVM from January 1999 to December 2021 on the other.

The sample is composed of all the most traded securities on the BRVM. Specifically, between 1998 and 2021, the number of securities listed on the BRVM varies between 39 and 41. More precisely, between 1999 and 2021, the number of securities listed on the BRVM varies between 39 and 42. Among the latter, only those that have information on stock market transactions over the entire period in question are retained in our sample. Based on this criterion, eight securities that have no information [1], on transactions for years are excluded from the sample. The reduced sample is now composed of 33 stocks listed on the BRVM. One (01) stock was removed from the list in 2003, therefore it must also be eliminated.

Furthermore, financial statements are only available for 32 stocks over the period from January 1999 to December 2020. Among these 32 stocks, two have already been excluded according to the previous criteria. Finally, the sample includes the 30 most traded stocks of the BRVM over the period from January 2000 to December 2021.

Table 1: List of stocks selected on the BRVM

BICC	BLHC	BNBC	BOAB	OACC	CFAC	ICCS	FTSC	NTLC	PALC
CHP	PRSC	CFSS	SAGC	SDCC	SDVC	SEMC	SGBC	SHEC	SIVC
SLBC	SMBC	SNTS	SOGC	HCPS	SRIC	STBC	SVOC	TTLC	TTRC

Source: Our own, based on BRVM data

The information from this market undertaking, allowed the extraction and calculation of the variables used in this study as presented in the following sub-section.

2.2 Study variable selections

The above sources collected values to describe two types of variables:

- ***The Explained or Dependent Variable: Illiquidity of a Stock:*** Several studies have used the bid-ask spread as an indicator of liquidity. However, in most of the emerging stock markets, which are considered illiquid, the information needed to determine the bid-ask spread is not available. Indeed, most stock markets (mainly those in Africa) still use an order system and not a price quotation system. It is for this simple reason that, in addition to this indicator, we have retained the illiquidity ratio of Amihud (2002). It is presented as the ratio between the daily return of asset j, in month t of year n, by the corresponding volume of the transaction.

Nevertheless, this indicator is slightly modified (without changing its meaning and significance) to adapt to the context of emergence which highlights the limits of the BRVM. More precisely, instead of working daily as recommended by Amihud, we use monthly values. Algebraically we can write:

$il_{jtn} = \frac{R_{jtn}}{V_{jtn}}$ With:

il_{jtn} The liquidity ratio for each security j in month t of year n ;

R_{jtn} the return for each security j in month t of year n;

V_{jtn} the trading volume for each security j in month t of year n.

- ***The Explanatory Variables or Independent:***
- **Market Illiquidity:** The market illiquidity indicator is evaluated as a whole by aggregation: the simple average illiquidity of all stocks traded on the same market except the one whose variable is dependent in the model.

$IL_{m,t} = \frac{1}{nj}\sum IL_{j,t}$

$IL_{m,t}$ Illiquidity of the market m at time t

ILj,t illiquidity of the security j listed on the market m at time t and nj the number of shares.

- **Market Performance:** It is obtained in the same way as market liquidity: $R_{m,t} = \frac{1}{nj}\sum R_{j,t}$ with

$R_{m,t}$ market performance m at time t

Rj,t : return of the stock j quoted on the market m at time t and nj the number of shares.

2.3. Econometric Specification of the Study Model

In order to better understand the methodical innovation in this work, we will first present the procedure of Chordia *et al*., (2000) which is the one

[1] Some have gone more than 12 months without being sold or purchased. Thus any stock that has more than one year of no information is excluded from the sample.

chosen next to the method of Hasbrouck and Seppi (2001) [principal component and canonical correlation analysis] and Huberman and Halka (2001) [the time series model]. The reason for choice is simple: almost all authors in the field use them in their studies. In addition, it is one of the most widely used procedures in market finance. It both describes and quantifies the relationship between the explanatory variable(s) and the variable being explained. Second, we specify the models that allow us to verify the existence of common liquidity factors.

- ***The Procedure of Chordia et al (2000)***

Chordia, Roll and Subrahmanyam in 2000, offered to the literature a method that was soon adopted by authors (Brockman and Chung, 2002; Caroline Fournier, 2003; ...). They were the first to introduce the liquidity market model into market finance research. In fact, the approach adopted by these authors has become the standard methodology in the financial literature for its undeniable merits in explaining the variation of individual stock liquidity. The method of Chordia *et al*., (2000) consists in developing a market model but adapted to liquidity while linearly regressing the variation of the liquidity of all individual stocks by that of the market. The purpose of this method is to estimate the directing coefficient of the line, i.e. the sensitivity coefficient. The interest of adapting the market model methodology to liquidity is to determine whether the liquidity of an individual security can be explained by the liquidity of the market and at what level.

The liquidity of an individual security is therefore regressed on the liquidity of the market according to the equation: $\Delta L_{j,t} = \alpha_j + \beta_j \Delta L_{M,t} + \varepsilon_{j,t}$ Where:

$\Delta L_{j,t} = \frac{L_{j,t} - L_{j,t-1}}{L_{j,t-1}}$ is the relative change in liquidity of security j from day t-1 to t or explained variable;

$\Delta L_{M,t} = \frac{L_{M,t} - L_{M,t-1}}{L_{M,t-1}}$ is the relative change in market liquidity from day t-1 to t or explanatory variable;

α_j *is a constant;*

β_j is the coefficient of the independent variable;

$\varepsilon_{j,t}$ is the error term.

For these authors, the use of relative variations and not of liquidity values makes it possible to overcome econometric problems, in particular the non-stationarity of the data series and the auto-correlation of the residues.

The regression can also be performed by lagging (backward or forward) the market liquidity indicator by one session relative to the stock liquidity indicator to not only account for the reaction or adaptation time of traders but also to capture the effect of non-simultaneous adjustments that arise from the variation in liquidity at the market and stock level (Ahmet Sensoy, 2015).

$$\Delta L_{j,t} = \alpha_j + \beta_j \Delta L_{M,t\pm 1} + \varepsilon_{j,t}$$

- ***Specification of the Study Design***

The model used in this study is the model presented above with adjustments. These adjustments come not only from the use of the value of the variables as opposed to the relative variation of the latter as in the Chordia *et al*., model (2000) but also from the inclusion of the market return. The integration of the latter makes it possible to move from a one (01) factor model to a two (02) factor explanatory model. The inclusion of the control variable (average market return (R_m) *au temps* $t, t-1$ *et* $t+1$) allows us to remove the spurious dependence induced by an association between return and liquidity measure and in order to isolate the effect of the level of market liquidity on that of stocks (José Luis Miralles *et al*., 2015; Kai Tissaoui *et al*., 2015; Brockman and Chung, 2002; Ihda Muktiyanto, 2015). Chordia *et al*., (2000) use in their work the daily data whose daily variations have higher fluctuations limiting in a large proportion the stationarity assumption. This justifies the integration of the variation of the variables in their model. However, in this study, we use monthly data given the fact that at the BRVM, the quotations are not very frequent and are done in irregular time intervals as in most African financial markets. This limits the fluctuations as observed in the daily data. From these adjustments, the following model is derived:

$$\boldsymbol{IL_{j,t} = \alpha_j + \beta_{1,j} IL_{m,t-1} + \beta_{2,j} IL_{m,t} + \beta_{3,j} IL_{m,t+1} + \theta_{1,j} R_{m,t-1} + \theta_{2,j} R_{m,t} + \theta_{3,j} R_{m,t+1} + \varepsilon_{j,t}}$$

3. THE RESULTS OF THE STUDY

The following table summarizes the results of the test for the existence of common illiquidity factors.

Table 2: Summary of the results of the test for the existence of common illiquidity factors

	L.ILmt		**ILmt**		**F.ILmt**	
Coefficients (β)	**Positive**	**Negatives**	**positive**	**Negatives**	**Positive**	**Negatives**
Significant						
1% (***)	3	3	7	1		1
5% (**)	5	2	4	2	1	1
10% (*)			1	1		1
Not significant	8	9	7	6	17	9
Total	**16**	**14**	**19**	**11**	**18**	**12**

The table shows that:

The illiquidity of the market at time (t_{-1}) has a positive influence on the illiquidity of 53% of the securities (i.e. 16/30), with a significant impact of 31.25% (5/16) at the 5% threshold and 18.75% at the 1% threshold. It has a negative influence on 47% (14/30), significant at 21.42% and 14.28% respectively at the 1% and 5% thresholds. Overall, illiquidity of the market at time t_{-1} has a significant influence on the liquidity of stocks at 43.33%. An investor can therefore rely on the past state of market liquidity to get a current idea of the liquidity of the stocks in his portfolio.

The illiquidity of the market at period t (ILmt) positively influences that of a stock by 63.33% significantly at 36.84%, 21.05%, 5.26%, respectively at the 1%, 5% and 10% threshold, negatively by 36.67% but significant at 9.09%, 18.18% and 9.09% at the 1%, 5% and 10% threshold. The illiquidity of the market influences the illiquidity of the stocks in the same period with an overall significance of 53.33% (16/30). The illiquidity of the market therefore immediately influences that of the shares. As a result, it becomes difficult for an investor or all market operators to protect themselves from an immediate shock to market liquidity.

The illiquidity of the market at time t_{+1} (F.ILmt) has a positive influence on the illiquidity of equities by 60%, significant at 5.55% at the 5% level, and a negative influence of 40% significantly at 8.33% for each of the significance levels. Overall, the illiquidity of the market at time t_{+1} has a significant influence on the illiquidity of stocks at time t at 13.33%. A better anticipation of the future state of the market liquidity will allow investors to have a current idea of the liquidity of the stocks in their portfolio.

Our results show that the illiquidity of the BRVM market simultaneously and significantly influences the illiquidity of the stocks listed on it. This conclusion is in line with those of Narayan *et al*., (2011), Amihud (2002). According to the latter, the liquidity of the market on the various financial markets (SHSE, SHZE, NYSE, AMEX) significantly influences the liquidity of the shares listed there and that all betas are positive. However, on the BRVM, the direction of the influence of market illiquidity on the liquidity of shares is not unanimous. It is either negative or positive. It follows from these results that the illiquidity of shares listed on the BRVM has two components: one specific and the other systematic. Therefore, investors in their portfolio management strategy must take into account the systematic component of liquidity (market illiquidity). The latter is therefore a non-diversifiable source of risk and deserves to be evaluated. This systematic liquidity property will therefore help investors to demand a liquidity premium for holding the stocks listed on this exchange.

CONCLUSION

This paper aims to test the existence of the common factor of illiquidity on the BRVM. This study therefore aims to answer the following question: does a systematic component of illiquidity exist on the Regional Stock Exchange?

The results obtained from empirical investigations conducted on the 30 stocks observed on the BRVM allow us to conclude that the illiquidity of the market significantly influences the illiquidity of the stocks listed on it. The direction of the influence is either positive or negative depending on the stock, thus depending on the specificity of the stock. Therefore, we cannot ignore the reality that there is a common factor of illiquidity on the Bourse Régionale des Valeurs Mobilières. This situation highlights one of the systematic liquidity risks developed by Archaya and Pedersen (2005) in the Liquidity Capital Asset Pricing Model on this stock exchange. It is therefore likely to influence the process of determining stock returns. Hence, investors in their investment decision making and stock portfolio management strategy must integrate the common factor of liquidity more precisely the market liquidity.

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Appendix: Summary of empirical results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
VARIABLES	BICC	BLHC	BNBC	BOAB	OACC	CFAC	ICCS	FTSC	NTLC	PALC
L.Ilmt	0.0420***	0.531	0.264**	0.00370**	0.246	-0.931	-0.0553	0.0211**	0.346	0.0667***
	(0.108)	(0.954)	(1.596)	(0.0619)	(2.339)	(0.615)	(0.101)	(0.190)	(0.233)	(0.134)
Ilmt	0.0266***	0.107	0.00236	-0.00328	2.715	0.234***	-0.196*	0.0319	0.293***	-0.0423
	(0.107)	(0.954)	(1.594)	(0.0540)	(2.349)	(0.164)	(0.101)	(0.190)	(0.232)	(0.133)
F.Ilmt	0.0689	-0.486	-0.972	0.00335	0.853	0.0670	0.0784	0.0659	0.280	0.0387
	(0.107)	(0.952)	(1.589)	(0.0537)	(2.347)	(0.142)	(0.1000)	(0.187)	(0.231)	(0.132)
L.Rmt	-0.00340	0.0794	0.0205	-0.00292	-0.0765	0.0590*	-0.00315	-0.00728	-0.0109	-0.00217
	(0.00648)	(0.0547)	(0.0846)	(0.00331)	(0.110)	(0.0356)	(0.00614)	(0.0116)	(0.0136)	(0.00787)
Rmt	0.00310	0.00691	0.0134	0.00326	-0.00726	0.0104	0.0185***	0.0122	0.00458	0.00955
	(0.00738)	(0.0629)	(0.0965)	(0.00375)	(0.120)	(0.0317)	(0.00704)	(0.0133)	(0.0155)	(0.00893)
F.Rmt	0.00838	-0.0511	-0.0275	-0.00127	-0.0360	-0.00505	0.00314	0.00864	0.00879	0.00528
	(0.00620)	(0.0535)	(0.0815)	(0.00311)	(0.101)	(0.0175)	(0.00591)	(0.0111)	(0.0131)	(0.00758)
Constant	-8.53e-05	0.000989	0.00213	0.000195**	-0.00226	6.57e-05	-0.000208	-0.000677**	-0.000186	-0.000487**
	(0.000163)	(0.00137)	(0.00212)	(8.36e-05)	(0.00260)	(0.000352)	(0.000153)	(0.000286)	(0.000355)	(0.000196)
Comments	127	127	127	117	127	127	127	127	127	127
R-squared	0.061	0.054	0.009	0.011	0.016	0.198	0.136	0.044	0.078	0.051

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
VARIABLES	CHP	PRSC	CFSS	SAGC	SDCC	SDVC	SEMC	SGBC	SHEC	SIVC
L.Ilmt	-0.214**	-0.271	0.261***	-0.473	-0.186	-0.170	-0.344	0.190	-0.00913	-0.477***
	(0.191)	(0.397)	(0.187)	(0.422)	(0.319)	(0.208)	(0.262)	(0.160)	(0.157)	(0.115)
Ilmt	0.0142**	-0.106	0.374**	0.439**	-0.0198	-0.140	-0.277**	0.298*	0.334**	-0.0460**
	(0.191)	(0.435)	(0.187)	(0.208)	(0.317)	(0.207)	(0.191)	(0.160)	(0.161)	(0.120)
F.Ilmt	-0.0186	-0.138	0.236	0.113	-0.0948	-0.414**	-0.0356	-0.109	0.141	0.0236
	(0.192)	(0.394)	(0.186)	(0.287)	(0.315)	(0.206)	(0.116)	(0.160)	(0.156)	(0.115)
L.Rmt	0.0279***	0.0249	0.0132	0.0703**	-0.0119	0.0110	0.00699	-0.0137	0.0145	0.00920
	(0.0106)	(0.0233)	(0.0108)	(0.0316)	(0.0191)	(0.0124)	(0.00968)	(0.00936)	(0.00952)	(0.00673)
Rmt	0.00407	0.0196	-0.0150	0.0308	0.0378*	0.0124	0.0295**	-0.00254	0.000599	-0.00866
	(0.0121)	(0.0236)	(0.0123)	(0.0303)	(0.0221)	(0.0141)	(0.0136)	(0.0106)	(0.0102)	(0.00712)

F.Rmt	0.0247**	0.0331	0.0171*	0.00793	-0.00717	0.0287**	0.00140	0.0190**	-0.00602	0.0165**
	(0.0103)	(0.0226)	(0.0103)	(0.0258)	(0.0183)	(0.0119)	(0.00797)	(0.00901)	(0.00919)	(0.00651)
Constant	-0.00117***	0.00156	-0.000193	-0.000293	0.000413	0.000465	0.000208	1.09e-05	-0.000386	0.000289
	(0.000266)	(0.00116)	(0.000287)	(0.000548)	(0.000479)	(0.000310)	(0.000272)	(0.000241)	(0.000294)	(0.000238)
Comments	112	125	123	79	127	127	127	126	125	125
R-squared	0.250	0.039	0.168	0.241	0.037	0.123	0.113	0.088	0.097	0.174

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
VARIABLES	SLBC	SMBC	SNTS	SOGC	HCPS	SRIC	STBC	SVOC	TTLC	TTRC
L.Ilmt	0.244	-0.0446	0.00147	-0.258**	0.109**	-0.674***	0.0447	0.178	0.228**	-0.109***
	(0.477)	(0.332)	(0.00795)	(0.124)	(0.0546)	(0.197)	(0.100)	(0.356)	(0.157)	(0.171)
Ilmt	-0.407	-0.211	0.00653***	0.346	-0.0276***	0.231	0.115***	0.0121	0.519***	0.0886***
	(0.475)	(0.332)	(0.1793)	(0.450)	(0.1578)	(0.206)	(0.117)	(0.376)	(0.169)	(0.176)
F.Ilmt	-0.0400***	-0.0888	0.00226	-0.198*	-0.198***	0.168	0.0972	0.211	0.332**	0.0823
	(0.0474)	(0.330)	(0.00790)	(0.103)	(0.0546)	(0.197)	(0.196)	(0.358)	(0.156)	(0.170)
L.Rmt	0.0186	0.000583	0.000333	0.0205	-0.00621*	0.0117	-0.00726	0.0104	-0.00987	0.00930
	(0.0281)	(0.0198)	(0.000472)	(0.0134)	(0.00332)	(0.0115)	(0.00536)	(0.0191)	(0.00932)	(0.0104)
Rmt	0.107***	0.0127	-0.000183	-0.000822	0.00728**	0.00229	0.0141**	0.00248	-0.00362	0.0550***
	(0.0327)	(0.0227)	(0.000541)	(0.0140)	(0.00345)	(0.0120)	(0.00632)	(0.0200)	(0.00956)	(0.0111)
F.Rmt	-0.0545**	0.000438	-8.61e-05	0.00491	0.00716**	-0.00307	-0.00945	0.00240	0.00452	-0.0149
	(0.0272)	(0.0190)	(0.000453)	(0.00861)	(0.00314)	(0.0111)	(0.00771)	(0.0187)	(0.00894)	(0.0101)
Constant	0.000848	0.000200	3.43e-05***	-6.78e-05	6.23e-05	0.000697*	0.000220	-0.000924	0.000692*	-0.00138***
	(0.000719)	(0.000503)	(1.20e-05)	(0.000229)	(0.000114)	(0.000410)	(0.000206)	(0.000723)	(0.000376)	(0.000329)
Comments	127	127	127	127	125	124	127	113	125	125
R-squared	0.158	0.006	0.017	0.124	0.166	0.136	0.048	0.021	0.105	0.298

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1