The nexus between bond liquidity, stock liquidity and foreign portfolio investment

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Abstract

The purpose of this article was to assess the impact of financial market liquidity on international capital flows in emerging markets. Specifically, the research investigates the effect of bond market liquidity and stock market liquidity on foreign portfolio investments using data for five emerging African countries, being Egypt, Kenya, Mauritius, Nigeria and South Africa, for the period 2000 to 2020. The data was sourced from the Bloomberg and World Bank (WDI) databases. Panel data analysis (fixed effects model) was undertaken using three different liquidity measures: the effective spread; Amihud’s (2002) illiquidity measure; and market impact as measured by trading volume. Our findings revealed mixed results. It was found that stock market liquidity attracted foreign portfolio investments. Although bond market liquidity, as measured by the volume of trade, promoted foreign portfolio investment, it was different for the effective spread, as the higher the effective spread, the higher the inward FPI flows, and vice versa. Results on the effects of the bond effective spread on FPI show that as long as the bonds are above the investable grade, investors are not discouraged by the cost of trading. Our findings thus confirm that FPI inflows are predisposed on liquid and efficient host country financial markets. Further, the entrance of foreign investors in the host country’s domestic financial markets, leads to the enhancing of liquidity in the local market, thus increasing risk sharing between local and foreign investors.

Keywords: stock market liquidity; bond market liquidity; illiquidity; foreign portfolio investment; emerging markets

JEL Classifications: F21; F38; F43; G15
**Introduction**

International capital flows are those financial resources that flow from a foreign or home country to a host country, often in pursuit of portfolio diversification objectives, risk reduction but in anticipation of higher returns. Such foreign capital flows comprise of foreign direct investment (FDI), foreign portfolio investment (FPI), foreign loans, foreign aid, and other similar investments. Of these, foreign portfolio investments (FPI) are the least favoured by developing countries, due to their temporary nature which can cause instability in the host country domestic financial markets. In contrast though, FPI inflows are deemed a better capital flow than debt or aid, both of which tend to create dependency by developing or emerging economies. In essence, such investments involve the transfer of financial assets across international territories in pursuit of profits. According to Makoni and Marozva (2018), FPI is thus any foreign capital flow which is invested in the financial assets available in a host country’s financial markets such as stocks (shares) or bonds.

Globalisation of financial markets has resulted in the further integration of emerging country financial markets with more advanced ones. This has in turn given rise to an increase in cross-border financial flows, supported by good quality institutions, and the removal of trade barriers and capital controls. Errunza (2001) unpacked the evolution of capital market development, arguing that in the presence of high liquidity, the supply of tradeable securities increases, thereby avoiding capital outflows. Further, the liberalisation of financial markets exposes domestic assets to international asset pricing, which tends to reduce domestic market risks, thereby reducing the cost of capital for multinational corporations. As investors gain more confidence in the domestic financial market's of a host country, liquidity on the stock and bond markets improves, while the underlying values of respective listed share and bond prices increase, thereby enhancing financial capital allocation to productive sectors of the economy.

As such, this study seeks to examine the effect of liquidity on international capital flows. Existing empirical evidence does not adequately articulate the link between bond liquidity, stock liquidity and foreign portfolio investments (FPI), in the context of emerging markets in Africa. The remainder of this paper is structured as follows: Section 2 provides a literary foundation on liquidity and foreign portfolio investment flows. The methodological approach is outlined in section 3, while the data analysis, results and discussion is presented in Section 4. The last section proffers the conclusion and recommendations thereof.

**Literature Review**

This article seeks to add to the growing literature on the role played by liquidity in attracting inward international portfolio investment capital flows, by giving perspectives from emerging markets in Africa. This section considers the FPI and liquidity theoretical underpinnings, supported by empirical evidence on both foreign portfolio investment and liquidity in which this study is grounded.

There are many theories that have tried to explain FPI, however none has singularly been a forerunner and comprehensively achieved this goal. FPI theories are mainly bound within the push-pull factors and include the international portfolio diversification theory (IPDT), the international capital asset pricing model (ICAPM) and the portfolio allocation model (PAM).

Branson (1970) built up on the seminal work of Markowitz (1959) by formulating a model that became known as the "stock adjustment model of capital movements". The IPDT portfolio diversification hypothesis postulated that the security allocation within an individual or institutional investment portfolio is selected on the basis of the associated risk-and-return profiles of both the investors and the respective markets (Branson, 1970).

Shortly thereafter, Solnik (1974) made his theoretical contribution to FPI by advocating that a foreign investor will look to international financial markets in order to diversify his portfolio by targeting to build and hold a portfolio that contains bonds and equities with risk-return profiles different from those available in the investor’s home country. This proposition was an international financial asset contextualized proposition, based on the combined efforts reflected in the earlier work from the 1960s of Sharpe-Litner-Mossin’s capital asset pricing model (CAPM).

Lastly, the portfolio allocation model (PAM) is an FPI theory that uses a dynamic optimisation model in which investors strive to maximise the present value of their utility from the expected return on a portfolio of assets.
that they hold. According to proponents of the PAM, international capital flows are dependent on risk and return, portraying positive reactions to rates of return, and negative reactions to risk (Makoni, 2016).

As such, it can be deduced from the foregoing theories on FPI that these investments are dependent on the risk and return profiles of the respective instruments, the financial market structures offering the corresponding opportunities, as well as investors’ risk appetites. Hence, investors direct their temporary cash injections at host country financial markets in pursuit of higher returns for their dollar. This often results in short term inward cash injections into the domestic markets of host countries, making them susceptible to shocks, and liquidity risk in the event of negative market activities such as financial crises, bank runs, stock market runs, amongst others. However, it is also this easy liquidity which attracts FPI to the host country in the first place.

Haider, Khan, Saddique and Hashmi (2017) assessed the impact of stock market performance and inflation on FPI in China. They found that stock market performance had a positive, and highly significant impact on FPI, while inflation portrayed a negative correlation with FPI. Likewise, Abu Shanab (2017) studied the relationship between FPI and capital market indices between 2005 and 2016. Using OLS, it was found that stock market capitalisation is significantly influenced by trade activities (buying and selling) by foreign investors. These empirical studies confirm the notion that foreign investors can exert a fair amount of influence on the performance and trading of host nation capital markets, hence it is important to ensure both liquidity and institutional compliance in the financial markets. Singhaniya and Saini (2017) concur that investors finance their respective portfolios of different countries to diversify risk and earn more returns. Thus, since foreign investment capital inflows provide financial stability in host country markets, reciprocally foreign investors should be rewarded to ensure the sustained attraction of further international capital inflows by providing existing and future investors with long-term benefits such as relaxed capital restrictions on capital gains and dividend repatriations, good governance within the financial markets, and liquidity options.

Al-Smadi (2018) examined FPI determinants in Jordan between 2000 and 2016. He concluded that foreign investors are attracted to financial markets which offer them both portfolio and risk diversification opportunities. Recently, Nxumalo (2020) examined determinants of FPI and found that institutional quality, economic growth and capital account openness were key determinants of FPI inflows. Further, his study confirmed that stock market development singularly plays a positive and significant role in the attraction of inward FPI flows to developing countries. The more developed a host country’s financial markets are, the higher the chance of improved liquidity. Such a feature would attract foreign investors as they would be assured of the ability to sell-off and exit the market, should the need arise.

The concept of liquidity is multi-dimensional. In fact, liquidity per se is difficult to define and measure, hence most scholars resort to defining, measuring and applying illiquidity in empirical studies. Amihud (2002) and Ahimud and Mendelson (1986) considered illiquidity as that measure which reflects the impact of order flow on price. In other words, it is the discount that a seller accepts or the premium that a buyer pays when executing a market order, arising from adverse selection and inventory costs. Over the years, different illiquidity proxies have been adopted, depending on the context and application. These measures are discussed in detail in the methodology section of this paper. To note however, is that other basic measures of liquidity are based on the size of the stock market, and the turnover ratio based on the trading volume.

Amihud and Mendelson (1986) hypothesised on the relationship between return and stock liquidity arguing that return increases illiquidity. A few years later, Amihud (2002) tested this hypothesis by proposing that perhaps over time, the ex-ante stock excess return increases in response to the expected illiquidity of the stock market. Using an illiquidity measure (ILLIQ) proxied as the daily ratio of absolute stock return to its dollar volume, averaged over some period, Amihud (2002) found that in the cross-section estimations, ILLIQ had a positive effect, consistent with earlier empirical studies. This was in addition to the usual negative effect of size (stock market capitalisation), which was an alternative proxy for liquidity. On the other end of the spectrum – over time, expected market illiquidity had a positive and significant effect on ex-ante stock excess return, while unexpected illiquidity had a simultaneous negative but significant effect on stock return. Amihud (2002) averred that the negative effect of unexpected illiquidity was attributable to higher realised illiquidity which in turn raises expected illiquidity, subsequently resulting in higher expected stock return. As such, theoretically, stock prices would then need to decline to make the expected return rise.
Reflected in Table 1 below is a summary of selected empirical literature pertaining to liquidity and foreign portfolio investments, based on studies conducted by other scholars whose focus was also on developing and emerging markets, similar to the ones that this study is considering.

**Table 1: Synthesis of selected liquidity and FPI empirical studies**

| Authors (year) | Study period | Countries of focus | Key variables | Methodology | Results |
|----------------|--------------|-------------------|---------------|-------------|---------|
| Amihud (2002)  | 1963-1997    | NYSE listed stocks (USA) | illiquidity measure (ILLIQ) proxied as the daily ratio of absolute stock return to its dollar volume, averaged over some period. Effective spread. FPI inflows. | CAPM, specifically risk premium | Mixed results: *Stock market liquidity attracts FPI. Bond market liquidity, as measured by volume of trade, promotes FPI investment. But when using the effective spread: the higher the effective spread, the higher the inward FPI flows, and vice versa.* |
| Haider, Khan, Saddique & Hashmi (2017) | 2007Q1 – 2015Q4 | China | CPI, FPI, stock market returns | ARDL | Significant +ve impact of stock market returns on FPI flows |
| Adebisi & Arikpo (2017) | 1984 - 2015 | Nigeria | FPI, stock market performance, stock market liquidity and total new issues | ARDL | No short-run causality established between stock market performance and stock market liquidity with FPI |
| Abu Shanab (2017) | 2005 – 2016 | Jordan | FPI, capital market indices | OLS | Stock market capitalisation is significantly influenced by trade activities (buying and selling) by foreign investors, hence FPI drives further development of host country financial markets |
| Makoni & Marozva (2018) | 1989 - 2016 | Mauritius | FPI, FDI, GDP growth, financial market development (FMD) measuring capitalisation, value traded and liquidity | ARDL, VECM, Granger causality | Uni-directional causality from FMD to FPI, thus confirming role of financial market activity and liquidity in attracting inward FPI |
| Nxumalo (2020) | 2000 - 2017 | 12 emerging market countries | FPI, institutional quality, financial market development (FMD), GDP growth | Dynamic panel data GMM, ARDL, VECM | FPI depends on FMD (including liquidity), as well as good institutional quality, high economic growth and capital account openness |

Source: Authors’ own compilation
According to Abankwa and Blenman (2021), while there is scant research on foreign exchange liquidity, market liquidity is considered an important feature for the well-functioning of all financial markets globally. It is against this background that we seek to highlight the significance of liquidity in the bond and stock markets in the context of foreign portfolio investments.

## Data and Research Methodology

### Data sources, sample selection and variables

Equity and bond market indices of selected African markets are used to explore the relationship between liquidity and foreign portfolio investment. For the empirical investigation, the selected stock and bond indices were those that closely tracked the performance of the overall market. A total of 5 bond indices and 5 equity indices were examined, the selected indices were active over the period of analysis. Bond market indices included: Egypt/ S&P Egypt Sovereign Bond Index; South Africa/ S&P South Africa Sovereign Bond Index; Kenya/ S&P Kenya Sovereign Bond Index; Nigeria/ S&P/FMDQ Nigeria Sovereign Bond Index; Mauritius/ S&P Mauritius Sovereign Bond Index. The selected stock market indices in this study were the South Africa/ JSE All Share Index ( ALSI ); Mauritius/ Mauritius Stock Exchange SEMDEX Index; Egypt/ EGX30 - Egyptian Stock Exchange Index; Nigeria/NGSEINDEX:IND NGX All Share Index and Kenya/NSE All Share Index (NASI). The data was extracted from the Bloomberg terminal.

The focus of analysis was on these selected African markets as they are technically and fundamentally different from developed economy markets (Marozva, 2020). The study by Bekkaert and Harvey (2017) indicated that emerging markets are mechanically and dynamically unique as they are not entirely integrated into world capital markets yet, and must therefore be treated as a distinct asset class. We employ annual data on the selected indices. The period under examination is 2000 to 2020 (this period was selected as most of the indices were active). Three liquidity measures for both the equity indices and bond indices are examined, being the percentage spread, Amihud’s (2002) illiquidity measure and market depth.

The percentage spread as the measure of illiquidity was calculated as \[ \frac{\text{Ask}_t - \text{Bid}_t}{(\text{Ask}_t + \text{Bid}_t)/2} \times 100 \] where \( \text{Ask}_t \) and \( \text{Bid}_t \) is the intra-day ask (bid) price at time \( t \) (see Chiu et al., 2012; Berkman & Nguyen, 2010). The higher the bid-ask spread, the higher the percentage spread, meaning the lower the liquidity vice versa. The percentage spread is used as it captures the cost of trading. The cost of trading has been found to be a hindrance to international capital flows as investors avoid investing in the markets that are illiquid. The benefits of investing in such markets are outweighed by the cost of liquidity hence a negative a priori relationship is expected.

The Amihud’s (2002) illiquidity measure (ILLIQ) is defined as the average ratio of the daily absolute return to the dollar trading volume on that day. The ILLIQ measure is calculated as \[ \text{ILLIQ}_{i,t} = \frac{1}{D_{i,t}} \sum_{d=1}^{D_{i,t}} \left| \frac{R_{i,d}}{D_{i,d}} \right| \] where \( \text{ILLIQ}_{i,t} \) is the Amihud’s(2002) illiquidity measure of firm \( i \) estimated in month \( t \); \( |R_{i,d}| \) and \( D_{i,d} \) are daily return and daily dollar trading volume for stock/bond \( i \) on day \( d \); \( D_{i,t} \) is the number of days for which data is available for stock/bond \( i \) in month \( t \). All other things remaining constant, higher trading volume results in a lower Amihud’s ILLIQ measure. This implies that the higher the trading volume, the higher the stock/bond liquidity and vice versa. Since this study focusses on emerging markets Marozva and Magwedere (2021) argue that ILLIQ is more appropriate for developing markets and the measure accounts for both critical dimensions of liquidity that is, trading volume and daily return.

Brockman and Chung (1999) asserted that dollar depth measure of liquidity is more relevant. According to Chiu et al. (2012), the market depth is computed as the number of shares at the best bid and ask price multiplied by their respective prices, and then take the average of each depth divided by 100 to reduce the size of the variable. This was later confirmed by Marozva and Makina (2020) who argued that market liquidity is multidimensional thus, liquidity has both a price dimension (spread) and a quantity dimension (depth). The volume of trade capture the speed at which investors can take advantage of opportunities. International investors are prosuaded in investing in markets were they are guaranteed to disinvest at their earliest convinence. Markets associated with high trading volumes are more liquidity and therefore less risk.

International capital flows have fluctuated substantially over the last four decades, resulting from the globalization process that took off in the early 1980s when most countries eased restrictions on flows of international capital (Shen, Lee & Lee, 2010). In this study, the foreign portfolio investments (FPI) included...
both bond and equity flows. Bonds and equity investments are the more traditional asset classes and are deemed liquid. These assets have been the most common avenues through which investors could access international markets. Foreign portfolio investment data was extracted from the World Development Indicators compiled by the World Bank. Also, the control variables gross domestic product (GDP), natural resources as a percentage of GDP, interest rates, and inflation data were sourced from the World Bank database.

**Model specification**

A multiple regression analysis was carried out to examine the nexus between stock/bond liquidity and FPI. To empirically test the effects of stock market liquidity and the bond market liquidity as measured by effective spread, the following regression models were explored:

\[
FPI_{it} = \alpha + \beta_1 FPI_{i,t-1} + \beta_2 SES_{it} + \beta_3 GDP_{it} + \beta_4 INF_{it} + \beta_5 INT_{it} + \beta_6 RES_{it} + \epsilon_{it} \tag{1}
\]

\[
FPI_{it} = \alpha + \beta_1 FPI_{i,t-1} + \beta_2 BES_{it} + \beta_3 GDP_{it} + \beta_4 INF_{it} + \beta_5 INT_{it} + \beta_6 RES_{it} + \epsilon_{it} \tag{2}
\]

where FPI_{it} is the foreign portfolio investment as a percentage of GDP in country i at time t; SES_{it} is the annualised daily percentage spread for stock index i at time t; BES_{it} is the annualised daily percentage spread for bond index i at time t; GDP_{it} is the gross domestic product for country i at time t; INF_{it} is the inflation rate as measured by CPI for country i at time t; INT_{it} is the annual average interest rate for country i at time t; and \( \epsilon_{it} = \mu_i t + \eta_{it} \) (\( \mu_i \) is the individual-specific error component and \( \eta_i \) is the the period-specific error component).

The second model involved testing the effects of Amihud’s (2002) illiquidity measure (ILLIQ) on FPI, and the models were specified in equation 3 and equation 4 as follows:

\[
FPI_{it} = \alpha + \beta_1 FPI_{i,t-1} + \beta_2 ILLIQ_{S_{it}} + \beta_3 GDP_{it} + \beta_4 INF_{it} + \beta_5 INT_{it} + \beta_6 RES_{it} + \epsilon_{it} \tag{3}
\]

\[
FPI_{it} = \alpha + \beta_1 FPI_{i,t-1} + \beta_2 ILLIQ_{B_{it}} + \beta_3 GDP_{it} + \beta_4 INF_{it} + \beta_5 INT_{it} + \beta_6 RES_{it} + \epsilon_{it} \tag{4}
\]

where \( ILLIQ_{S_{it}} \) is Amihud’s (2002) illiquidity measure for stock index i at time t; and \( ILLIQ_{B_{it}} \) is Amihud’s (2002) illiquidity measure for bond index i at time t. All other variables remain as previously described.

The third and last aspect of the analysis involved testing the effects of market impact as measured by trading volume on FPI. These models were specified in equation 5 and equation 6 as follows:

\[
FPI_{it} = \alpha + \beta_1 FPI_{i,t-1} + \beta_2 VOL_{S_{it}} + \beta_3 GDP_{it} + \beta_4 INF_{it} + \beta_5 INT_{it} + \beta_6 RES_{it} + \epsilon_{it} \tag{5}
\]

\[
FPI_{it} = \alpha + \beta_1 FPI_{i,t-1} + \beta_2 VOL_{B_{it}} + \beta_3 GDP_{it} + \beta_4 INF_{it} + \beta_5 INT_{it} + \beta_6 RES_{it} + \epsilon_{it} \tag{6}
\]

Where, \( VOL_{S_{it}} \) is the annualised average trading volume for stock index i at time t, and \( VOL_{B_{it}} \) is the annualised average trading volume for bond index i at time t; and all other variables remain the same as earlier described.

**Empirical Findings**

This section presents the empirical results of the study. It outlines the descriptive statistics, followed by the correlation matrix, neither of which were discussed for brevity. Our prime focus is on the empirical results to the models which are presented and discussed in detail herein.

Table 2 below portrays the descriptive statistics of the five sampled African countries for the period between 2000 and 2020.
Table 2: Descriptive statistics

| Variable        | Mean     | Median  | Maximum  | Minimum | Std. Dev  | Jarque-Bera |
|-----------------|----------|---------|----------|---------|-----------|-------------|
| FPI RAW (Millions) | -1,680  | - 64    | 14,300   | -23,900 | 6,430     | 18.7875***  |
| SES             | 323.5327 | 0.045216| 2099.240 | 0.000000| 661.6888  | 50.1860***  |
| BES             | -0.653934| -0.036299| 0.152911 | -18.11091| 2.300310| 6729.963***  |
| ILLIQ_S         | 0.000325 | 0.000235| 0.003402 | 0.000000| 0.000447 | 2329.845*** |
| ILLIQ_B         | -0.0000  | -0.0000 | 0.001013 | -0.000018| 0.000155 | 1642.145*** |
| VOLS_RAW(Millions) | 1.0419  | 336.1500| 5,977,283| 2.500000| 2,102,937| 43.2239***  |
| VOLB_RAW(Millions) | 33.7592 | 981.7510| 190.0000 | 79.54390 | 67.9575 | 41.8660***  |
| INT             | 6.010629 | 5.738320| 18.18000 | -8.009867| 5.180913| 0.3375      |
| GDP_RAW (Millions) | 170,000  | 106,000 | 547,000  | 4,610    | 153,000   | 9.5909***   |
| CPI             | 8.011901 | 6.736380| 29.50661 | -0.692030| 5.043667 | 76.6615***  |

Source: Authors’ own compilation

Table 3 presents the cross-correlation matrix of the study sample of the 5 selected African countries over a 21-year period.

Table 3: Correlation Matrix

| Variables | FPI    | SES    | BES    | ILLIQ_S  | ILLIQ_B  | VOLS     | VOLB     | INT      | GDP_RAW  | CPI     |
|-----------|--------|--------|--------|----------|----------|----------|----------|----------|----------|---------|
| FPI       | 1.0000 |        |        |          |          |          |          |          |          |         |
| SES       | 0.2129*| 1.0000 |        |          |          |          |          |          |          |         |
| BES       | -0.1085| -0.564***| 1.0000 |          |          |          |          |          |          |         |
| ILLIQ_S   | 0.0540 | -0.0114 | -0.0067| 1.0000   |          |          |          |          |          |         |
| ILLIQ_B   | 0.0122 | 0.0613 | -0.0169| 0.2028**| 1.0000   |          |          |          |          |         |
| VOLS      | 0.2267***| 0.9933***| -0.5242***| -0.0157| 0.0621 | 1.0000   |          |          |          |         |
| VOLB      | 0.2374***| 0.9771***| -0.5138***| -0.0189| 0.0623| 0.9946**| 1.0000   |          |          |         |
| INT       | 0.1194 | 0.260***| -0.2817***| 0.0319| 0.2052*| 0.2560***| 0.2529***| 1.0000   |          |         |
| GDP       | -0.378***| -0.5053***| 0.2817***| -0.1387| -0.2387***| -0.5103***| -0.5109***| -0.2611***| 1.0000   |         |
| CPI       | -0.1346| -0.2875| 0.1945***| -0.0687| -0.1560 | -0.2941**| -0.3019**| -0.3703***| 0.1823 | 1.0000 |

Source: Authors’ own compilation

According to our correlation matrix in Table 3 above, none of the variables under study portrayed any collinearity characteristics, hence we did not encounter the problem of multicollinearity. The next section discuss the empirical results on the effects of Stock/Bond effective spread on foreign portfolio investments.
Table 4: Effects of Stock/Bond effective spread on foreign portfolio investments

| Dependent variable | FPI   | FPI   |
|--------------------|-------|-------|
| **Independent variables** |       |       |
| L.FPI              | -0.313** | -0.305** |
| (0.104)            | (0.106) |
| SES                | -0.0151*** |
| (0.000921)         |       |
| BES                | 0.856*** |
| (0.0106)           |       |
| RES                | 0.00182 |
| (0.00828)          | 0.00147 |
| GDP                | 0.00416 | 0.413*** |
| (0.104)            | (0.106) |
| CPI                | -0.500** |
| (0.00562)          | -0.00587 |
| INT                | -0.341*** |
| (0.0554)           | -0.306*** |
| Constant           | -0.335 | -0.368 |
| (1.190)            | (1.205) |
| Adj. $R^2$         | 0.329 | 0.208 |

Country-Fixed Effects: Yes   Year-Fixed Effects: Yes

# of observations: 105   # of years: 21

Source: Authors’ own compilation

Note: Table 4 presents estimation results of Equation (1) and (2) that relate to the effects of stock/bond effective spread on foreign portfolio investments. All regression models include a constant, control variables (macroeconomic factors), and regional and time-fixed effects (but not reported for brevity). Section 2.2 defines all variables used. The sample consists of 5 African Countries over the period 2000—2020. Robust standard errors reported in parentheses are calculated using the Huber White Sandwich Estimator for the covariance matrix. *; **; *** indicate significance at the 5%, 1%, and 0.1% levels, respectively, based on robust standard errors.

The results confirm that FPI is persistent, similar to the conclusions reached by Makoni (2018). Stocks’ effective spread was found to be negatively related to foreign portfolio investment, implying that markets with relatively low liquidity do not attract FPI, and vice versa. This finding is in line with Haider et al. (2017) who averred that foreign portfolio equity investors while investing abroad, are cognisant of market liquidity, size and trading costs. Therefore, foreign portfolio investors will prefer to invest in larger and more efficient markets, along with the low cost of trading. These results confirms the need for well-developed capital markets to improve liquidity.

On the contrary, the bond market results revealed a positive and significant relationship. If the bonds are above investable grade, despite high effective spreads, other countries are persuaded to invest and harvest the liquidity risk premium. Similarly, Kirabaeva (2009) found that countries with high liquidity risk tend to attract foreign investments. Tong, Razin and Goldstein (2007) also argued that as the probability of an aggregate liquidity shock increases, agents know that they are more likely to need to sell the investment early, therefore FPI becomes a better alternative to foreign direct investments, due to its liquidity properties. Our other results showed that CPI and interest rates discouraged FPI as expected.
Table 5: Effects of Stock/Bond illiquidity (ILLIQ) on foreign portfolio investments

| Dependent variable | FPI | FPI |
|--------------------|-----|-----|
| Independent variables | (1) | (2) |
| L.FPI              | -0.297"** | -0.295"** |
|                   | (0.105) | (0.105) |
| ILLIQ_S            | -20.24"*** | |
|                   | (4.90) | |
| ILLIQ_B            | 5.257 | |
|                   | (46.2) | |
| RES                | 0.00125 | 0.00136 |
|                   | (0.00841) | (0.00853) |
| GDP                | 0.477"*** | 0.467"*** |
|                   | (0.106) | (0.109) |
| CPI                | -0.00617 | -0.00615 |
|                   | (0.00566) | (0.00572) |
| INT                | -0.00389 | -0.00379 |
|                   | (0.00563) | (0.00563) |
| Constant           | -0.430 | -0.427 |
|                   | (1.208) | (1.241) |
| Adj. $R^2$         | 0.202 | 0.201 |
| Country-Fixed Effects | Yes | Yes |
| Year- Fixed Effects | Yes | Yes |
| # of observations  | 105 | 105 |
| # of years         | 21 | 21 |

Source: Authors’ own compilation

Note: the table presents estimation results of Equation (3) and (4) that relate to the effects of stock/bond ILLIQ on foreign portfolio investments. All regression models include a constant, control variables (macroeconomic factors), and regional and time-fixed effects (but not reported for brevity). Section 2.2 defines all variables used. The sample consists of 5 African Countries over the period 2000—2020. Robust standard errors reported in parentheses are calculated using the Huber White Sandwich Estimator for the covariance matrix. *, **; *** indicate significance at the 5%, 1%, and 0.1% levels, respectively, based on robust standard errors.

In line with the results in Table 4, FPI was found to be persistent as the lagged FPI is significantly related to the current year FPI. Also, stock illiquidity (ILLIQ) was found to be negatively and significantly related to FPI, further evidencing that illiquidity discourages FPI. Given that the markets under analysis are emerging economies with moderate country and market risks, investors are uncomfortable to channel their funds towards these markets and instruments as they may later face difficulties in liquidating their investments. According to Bernstein (1987), illiquidity in emerging markets makes it difficult for investors to disinvest.

With respect to the control variables, GDP was found to be positively associated with FPI, meaning that countries with strong or growing economies attract portfolio investments from other countries, thus increasing temporary liquidity in the host country’s financial markets, in corroboration with Makoni (2016; 2020). Furthermore, Marozva and Makoni (2018) argue economic growth enhances international capital flows. They therefore recommended that the Governments of African countries should intervene by putting in policies in place that enhances the development of local infrastructure so that it can further grow its economy, thereby increasing employment and trade opportunities, and ultimately attracting the much-envisaged foreign capital flows.
Table 6: Effects of Stock/Bond volume of trade on foreign portfolio investments

| Dependent variable | FPI | FPI |
|--------------------|-----|-----|
| L.FPI              | -0.297** (0.105) | -0.297** (0.105) |
| VolS               | 0.203** (0.0320) | 0.169*** (0.0273) |
| VolB               |                | 0.169*** (0.0273) |
| RES                | 0.0106*** (0.00840) | 0.00155 (0.00840) |
| GDP                | 0.494*** (0.106) | 0.442*** (0.106) |
| CPI                | -0.0639*** (0.00566) | -0.0689*** (0.00576) |
| INT                | -0.00415 (0.00564) | -0.00391 (0.00561) |
| Constant           | -0.515 (1.215) | -0.460 (1.207) |
| Adj. R²            | 0.206 | 0.205 |
| Country-Fixed Effects | Yes | Yes |
| Year- Fixed Effects | Yes | Yes |
| # of observations  | 105 | 105 |
| # of years         | 21  | 21  |

Source: Authors’ own compilation

Note: the table presents estimation results of Equations (5) and (6), respectively, that relate to the effects of stock/bond volume of trade on foreign portfolio investments. All regression models include a constant, control variables (macroeconomic factors), and regional and time-fixed effects (but not reported for brevity). Section 2.2 defines all variables used. The sample consists of 5 African Countries over the period 2000—2020. Robust standard errors reported in parentheses are calculated using the Huber White Sandwich Estimator for the covariance matrix. *, **, *** indicate significance at the 5%, 1%, and 0.1% levels, respectively, based on robust standard errors.

According to our regression results, FPI was found to be persistent. This result confirms those from other empirical studies (see for example Goldstein, Razin & Tong, 2008; 2010). Thus, empirically, there was need to allow for the lagged dependent variable in the equation to control for the dynamics of the information set. Both volume of trade for stock markets and bond markets were found to attract FPI. The higher the volume of trade, the higher the FPI. This result illustrates that investors are comfortable investing in capital markets with higher liquidity as measured by volume of trade. Boehmer, Saar and Yu (2005) affirmed that higher liquidity encourages investors to participate in capital markets, as higher liquidity is presumed to be associated with transparent markets with strong institutions.

Conclusions and Recommendations

Building on and extending on the disposition that capital market liquidity enhances market efficiency and thus attracts FPI, this article examined the effects of stock/bond liquidity on FPI, in the presence of other control variables (macro-economic variables). To accomplish this objective, an analysis of 5 African countries over a period of 21 years was investigated using the fixed effect panel data model. Focusing on effective spread, Amihud’s (2002) ILLIQ measure and volume of trades as measures of liquidity mixed results were revealed. It was found that stock market liquidity attracted foreign portfolio investments. Although bond market liquidity, as measured by volume of trade, promoted foreign portfolio investment, it was different for the effective spread as the higher the effective spread, the higher the inward FPI flows, and vice versa. Thus, the results to this study concluded both favourable and unfavourable arguments for capital flow liberalization, but largely supports the notion that foreign portfolio investment is predisposed on liquid and efficient local financial markets. Results on the effects of bond effective spread on FPI show that as long as the bonds are above the investable grade, investors are not discouraged by the cost of trading.
It should be noted that the entrance of foreign investors in the host country's domestic financial market, leads to the boosting of liquidity in the local market, resulting in broader support from both domestic and foreign investors, while risk sharing will also increase. In light of this, we recommend that governments incorporate foreign investor friendly clauses into their macro-economic policies, particularly those pertaining to financial markets. Despite the temporary nature of FPI inflows, they do provide an important capital injection, which can be used to support productive sectors of the economy. Also, because of the bi-directional positive feedback between FPI and capital market (stock and bond) liquidity – increased inward FPI flows would encourage higher inflows due to the perceived market liquidity, worthwhile returns commensurate with the risk exposure.

This study, though thorough, had some limitations. Firstly, we restricted our focus to only five out of 54 African countries. This was due to the availability of complete data for the variables of interest over the 21-year period. Also, we selected only those countries with the largest stock markets in terms of market capitalisation and bond trade activity, which would meet the ‘emerging markets’ classification. The bond markets in Africa are few and limited. Due to these shortcomings, our study results may have limited generalisability to other financial markets, both within and outside of Africa. Future research could consider a comparative study between developed and developing or emerging market economies insofar as liquidity and international capital flows are concerned. In the spirit of meeting the UN’s SDGs by 2030, an assessment of the state of financial market development and international capital flows could also be undertaken, with an increase in the number of African countries under survey.

References

Abankwa, S. & Blenman, L.P. (2021). Measuring liquidity risk effects on carry trades across currencies and regimes. Journal of Multinational Financial Management, Volume 60. 100683. DOI: https://doi.org/10.1016/j.mulfm.2021.100683.

Abu Shanab, S. (2017). The effect of foreign portfolio investment (fpi) on capital market indices (evidence from Amman stock exchange). International Review of Management and Business Research, 6 (4): 1469-1477. Available from https://www.irmbrjournal.com/papers/1513074842.pdf

Al-Smaidi, M. O. (2018). Determinants of foreign portfolio investment: the case of Jordan. Investment Management and Financial Innovations, 15(1), 328-336. DOI: http://dx.doi.org/10.21511/imfi.15(1),2018.27

Amihud, Y. & Mendelson, H. (1986). Asset pricing and the bid-ask spread. Journal of Financial Economics, Volume 17 (2). 223-249. DOI: https://doi.org/10.1016/0304-405X(86)90065-6.

Amihud, Y. (2002). Illiquidity and stock returns: cross-section and time-series effects. Journal of financial markets, 5(1), 31-56. https://doi.org/10.1016/S1386-4181(01)00024-6

Bernstein, P. (1987). Liquidity, stock markets, and market makers. Financial Management, 54-62. DOI: https://doi.org/10.2307/3666004

Boehmer, E., Saar, G., & Yu, L. (2005). Lifting the veil: An analysis of pre-trade transparency at the NYSE. The Journal of Finance, 60 (2), 783-815. DOI: https://doi.org/10.1111/j.1540-6261.2005.00746.x

Branson, W. (1970). Monetary policy and the new view of international capital movements. Brookings Papers on Economic Activity, (No. 2, 1970). Available online from: http://brookings.edu/wp-content/uploads/1970/06/1970b_bpea_branson_krause_kareken_salant.pdf

Errunza, V. (2001). Foreign portfolio equity investments, financial liberalization, and economic development. Review of International Economics, 9(4), 703-726. DOI: https://doi.org/10.1111/1467-9396.00308

Goldstein, I., Razin, A., & Tong, H. (2008). Liquidity, institutional quality and the composition of international equity outflows (No. w13723). National Bureau of Economic Research. Available online from: https://www.nber.org/system/files/working_papers/w13723/w13723.pdf

Haider, M. A., Khan, M. A., Saddique, S., & Hashmi, S. H. (2017). The impact of stock market performance on foreign portfolio investment in China. International journal of economics and financial issues, 7(2), 460. Available from https://www.econjournals.com/index.php/ijefi/article/view/3979

Kirabaeva, K. (2009). International capital flows and liquidity crises. Working paper. Department of Economics, Cornell University, Ithaca, NY 14853. Available from https://www.nber.org/system/files/working_papers/w15599/w15599.pdf

Makoni, P. L. R. (2016). The role of financial market development in foreign direct investment and foreign portfolio investment in selected African economies (Doctoral dissertation, University of the Witwatersrand, Faculty of Commerce, Law and Management, Wits Business School). Available from https://wiredspace.wits.ac.za/jspui/bitstream/10539/23720/1/577649_PhD_thesis_29_November_201

Peer-reviewed Academic Journal published by SSBFNET with respect to copyright holders.
Makoni, P. L. R. (2018). FDI, FPI and Institutional Quality - Evidence from African Countries. Academy of Accounting and Financial Studies Journal, 22(5), 1-13. Available from https://www.abacademies.org/articles/fdi-fpi-and-institutional-quality-evidence-from-african-countries-7493.html

Makoni, P. L. (2020). Foreign Portfolio Investments, Exchange Rates and Capital Openness: A Panel Data Approach. International Journal of Economics & Business Administration (IJEBBA), 8(2), 100-113. DOI: https://doi.org/10.35808/ijeba/458.

Makoni, P. L., & Marozva, G. (2018). The nexus between foreign portfolio investment and financial market development: Evidence from Mauritius. Academy of strategic management journal, 17(5), 1-14.

Marozva, G. (2020). Liquidity Mismatch Index and Banks' Stock Returns. International Journal of Economics and Business Administration, Volume VIII Issue 4, 930-945. DOI: https://doi.org/10.35808/ijeba/641.

Marozva, G., & Magwedere, M. R. (2021). COVID-19 and Stock Market Liquidity: An Analysis of Emerging and Developed Markets. Scientific Annals of Economics and Business, 68 (2), 129-144. http://saeb.feaa.uaic.ro/index.php/saeb/article/viewFile/1310/217

Marozva, G., & Makina, D. (2018). Foreign direct investment, infrastructure development and economic growth in African economies. Acta Universitatis Danubius. Öconomica, 14(6), 90-102.

North, D.C. (1990). Institutions, institutional change and economic performance. Cambridge: Cambridge University Press.

North, D.C. (1990). Institutions, institutional change and economic performance. Cambridge: Cambridge University Press.

Nxumalo, I. S. (2020). International capital inflows in emerging markets: the role of institutions (Masters dissertation, University of South Africa, Faculty of Economic and Management Sciences). Available at: https://uir.unisa.ac.za/bitstream/handle/10500/26992/dissertation_nxumalo_is.pdf?sequence=1

Shen, C. H., Lee, C. C., & Lee, C. C. (2010). What makes international capital flows promote economic growth? An international cross-country analysis. Scottish Journal of Political Economy, 57(5), 515-546. DOI: https://doi.org/10.1111/j.1467-9485.2010.00529.x

Singhania, M., & Saini, N. (2017). Determinants of FPI in developed and developing countries. Global Business Review, 19(1) 187-213. DOI: https://doi.org/10.1177/0972150917713280

World Bank. (2020). World development indicators (WDI) 2020. World Bank Publications. Available from https://databank.worldbank.org/source/world-development-indicators