Introduction:

Makarov and Schoar (2022) investigated the dynamics of liquidity pools and their impact on trading volume in the BPEA Conference Drafts. They highlighted that "To compensate liquidity providers for providing liquidity everyone who executes a swap order pays a transaction fee that goes to the liquidity pool” (Makarov and Schoar, 2022, p. 24). Liquidity providers rely on transaction fees, as they carry a large amount of risk, as the DeFi market is relatively volatile. A larger liquidity pool would benefit from being able to sustain more transactions, but also carry higher risk.

Miori and Cucuringu (2023) focused on Uniswap v3 liquidity pools in their study titled "DeFi: Modeling and Forecasting Trading Volume on Uniswap v3 Liquidity Pools." To investigate the impact of liquidity pool size on trading volume, they adopted a quantitative approach, employing data from Uniswap v3's decentralized exchange. Utilizing statistical models, they analyzed the relationship between liquidity pool size and trading volume over a specific period. They argue that larger liquidity pools reduce trading costs, which in turn attracts more market participants and drives up trading activity. Their quantitative approach allowed them to establish a clear and statistically significant correlation between liquidity pool size and trading volume on Uniswap v3.

In support of these findings, Miori and Cucuringu (2023) also highlighted that increased trading volume results in enhanced price discovery and reduced market volatility. This indicates that deeper liquidity not only fosters higher trading volumes but also contributes to overall market efficiency and stability in cryptocurrency markets.

Aigner and Dhaliwal (2021) provided more context on the risk profile for a liquidity provider. They found a nonlinear relationship between risk profile and price. When the asset price drops to zero, the portfolio rapidly follows. This shows that larger liquidity pools carry risk of impermanent loss, smart contract risk, fraudulent DEXs, regulatory clampdowns, ISP censorship, and other inherent risks. Because portfolio sizes in large pools are bigger, they carry different degrees of risk than small pool sizes. Something to keep in mind for future studies. Additionally, this study focuses on Uniswap, and states that “the biggest liquidity pool on Uniswap is earning an average of 78% annually at current trading volumes” (Aigner and Dhaliwal, 2021). Showing strong support for this study and its impacts on business.

Conversely, while liquidity pool size generally has a positive impact on trading volume, Miori and Cucuringu (2023) acknowledge potential risks associated with excessively large pools. They note that "very large pools may raise centralization concerns, as a few dominant pools controlling a substantial portion of liquidity could compromise the decentralized nature of DeFi platforms" (Miori & Cucuringu, 2023, p. 15). This highlights the importance of striking a balance between deep liquidity and maintaining a diverse and decentralized ecosystem.

Conclusion:

The reviewed literature provides compelling evidence supporting the notion that liquidity pool size is a critical factor influencing trading volume in cryptocurrencies and DeFi protocols. Larger liquidity pools tend to attract more trading activity, improving market efficiency and price discovery. The findings from Makarov and Schoar (2022), Miori and Cucuringu (2023), and Aigner and Dhaliwal (2021) consistently demonstrate the positive relationship between liquidity pool size and trading volume across various DeFi platforms. However, the potential risks associated with excessive centralization underscore the importance of carefully managing liquidity pool sizes to maintain a healthy and decentralized DeFi ecosystem. Overall, these findings have significant implications for both market participants and platform designers as they seek to optimize liquidity provision and enhance the overall functioning of DeFi ecosystems.