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# Consumer attitudes, stock market liquidity, and the macro economy: A Canadian perspective☆,☆☆

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ABSTRACT

This study addresses the impact of equity market liquidity on Canadian economic growth and investigates how consumer attitudes/sentiments affect the dynamic macro-liquidity relationship. Using various market liquidity proxies (e.g., illiquidity ratio and open interest of equity futures) while controlling for a specific set of variables, we obtain the following main results: we document the predictability role of liquidity on future economic growth, and we find that during periods of high exchange-rate volatility between the Canadian and US dollars, growth becomes highly affected by stock-market liquidity movements. Furthermore, there is some evidence that stock market liquidity contains additional information for estimating the future state of the economy but is conditional on periods of higher positive consumer attitudes—specifically, consumer confidence in the economy. Additionally, we find strong evidence consistently supporting the premise that a positive change in general consumer sentiment exhibits a direct and significant effect on some macro-economic variables including personal consumption, consumer credit, and economic growth.



## 1. Introduction

Does stock market liquidity explain economic growth? We investigate this relationship among stock market liquidity, economic growth, and some macro-economic variables of Canada, taking into consideration consumer attitudes as well as the currency change between the Canadian and US dollars.[1] To address the interrelationships, we examine three major linked research questions. First, we research whether or not stock market liquidity can predict the Canadian macro-economy using various market liquidity proxies; second, we want to see if consumer attitudes in Canada exhibit an impact on the macro-economy; and third—ultimately—we want to see if consumer attitudes affect the dynamic relationship between economic growth and stock market liquidity (macro-liquidity relationship).

Some studies have demonstrated a strong relation between stock market liquidity and the business cycle (e.g., Naes, Skjeltorp, & Odegaard, 2011; Smimou & Khallouli, 2012). We examine this relationship using seven liquidity proxies applied to a Canadian sample while taking into account the impact of the currency movement. Moreover, if we agree that fluctuation of the Canadian currency against the US dollar has an impact on the state of the Canadian economy, then we need to see how this movement influences the dynamic macro-liquidity relationship of the nation.

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☆☆ *Data availability*: Parts of the utilized data are commercially available from sources identified in the text, and the remainder of the data are available from public sources.
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[1] In alignment with past studies and throughout the article, consumer attitude and consumer sentiment have been used interchangeably.

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This paper is motivated by the recent decline of economic growth and the shortage of liquidity in the global market. Additionally, a number of government officials including chairmen and governors of national banks have started to lower their growth expectations for the coming years given the weaknesses they discern in the global economy. Different explanations have been advanced to account for the decline of growth, including the effects of the financial crisis of 2008 (i.e., decline of the equity market) and the steep increase of the cost of debt to some of the Eurozone countries. In addition, higher demand in emerging markets for oil is considered a major contributor to the supply–demand disequilibrium and raised oil prices, a development that in turn harms economic growth in the Eurozone and North American nations.

This paper studies the impact of stock market liquidity/illiquidity on a number of relevant macro-economic variables, in contrast to much of the recent literature, which has focused on the following issues: (i) the impact of stock market illiquidity on excess return[2]; and (ii) the impact of "bad credit conditions" on real economic activity.[3]

To our knowledge, our paper is the first to establish a direct link between liquidity of Canadian equity markets and economic growth, while taking behavioral indicators into account in the estimation procedure. Many previous studies have set out to examine the Canadian economy's level of integration and coordination with the American economy, yet they did not examine (1) if and how the liquidity of Canadian stock markets influences the nation's economic growth, or (2) if the recent fluctuation of the Canadian versus the US dollar has changed the relationship between liquidity of stock market and economic growth (see, e.g., Naes et al., 2011; Smimou & Khallouli, 2012). Also, the state of the Canadian currency, which is at parity with the US dollar, has reduced the remaining differences of investment and consumption opportunities between both countries and between Canada and the rest of the developed world. For instance, by the end of the last quarter of 2011, with Loonie averages above par versus the US dollar for the first time since 1976, investors sought assets of highly rated governments as a haven from Euro-area debt distress—which of course helps catalyze a drastic improvement of Canadian capital market liquidity.[4]

Our paper builds on the theoretical framework of past studies and connects two strands of the literature. The first focuses on the market microstructure literature on liquidity, as we intend to show the relevance of the behavior of the stock market and its links to macroeconomic understandings (e.g., Harvey, 1988; Levine, 1991; Levine & Zervos, 1998; Longstaff, 2004; Naes et al., 2011; Smimou & Khallouli, 2012). The second strand is the behavioral economic literature, notably those studies related to consumer attitudes/consumer sentiments and the equity markets (see, e.g., Katona, 1978; Katona & Mueller, 1953; Chopin & Darrat, 2000; Fisher & Statman, 2003; Lemmon & Portniaguina, 2006; Schmeling, 2009). Seeking to understand and extend this research direction in the Canadian context is a worthwhile exercise that is consistent with prior studies on stock market returns and investor sentiment. Literature suggests that investment sentiment tends to show a positive impact on stock market returns (see, e.g., Jansen & Nahuis, 2003; Brown & Cliff, 2005; Baker & Wurgler, 2006).

The rest of this paper is structured as follows. The second section discusses relevant related studies to show the basis of our exploratory research questions and hypotheses. The third section looks at the macro-economic data and liquidity measures, providing the data-collection method and definitions of the measures we use, outlines of the variables and liquidity proxies, and relevant summary statistics. The fourth section details the nature of the dynamics of stock market liquidity vis-à-vis that of the real economy, utilizing seven relevant market liquidity proxies from the period 1986 to 2011. (One proxy tends to show a high level of liquidity based on a subset of stocks listed in the Toronto Stock Exchange (TSX); another proxy is comprehensive in nature but less liquid based on whole stocks listed in the TSX, the relative quoted bid-ask spreads based on stocks listed in the main equity index; and four proxies are computed based on the S&P/TSX 60 index futures—a tradable index that is readily available to market participants of the Montréal Exchange.) The fifth section presents empirical evidence by looking more closely at the impact of consumer attitudes/sentiments (or lack thereof) on the macro-liquidity relationship and documenting Granger-causality between stock market liquidity and real economy while controlling for movement of the Canadian dollar. Finally, the sixth section addresses robustness of the empirical examination using GMM estimations, and the seventh section presents the conclusion.

## 2. Literature review and background

### 2.1. Related studies and hypotheses

The literature on financial-macro economy linkages is immense; therefore given space limits we present only a brief review of some of the most relevant studies for our purposes. The relevance of liquidity of equity markets has long been documented by research (see, e.g., Amihud & Mendelson, 1989; Acharya & Pedersen, 2005; Poon, Rockinger, & Stathopoulos, 2013). Similarly established is the effect of information content on prices (Copeland & Friedman, 1987); the latter in their seminal work investigated the impact of information arrival on asset prices. In an experimental setting they controlled for the information content—simultaneously and sequentially received—and whether it was homogeneous or heterogeneous. One result they present is that bid-ask spreads widen significantly when traders are exposed to price uncertainty resulting from information heterogeneity (see, e.g., Chung, McInish, Wood, & Wyhowski, 1995; Amihud & Mendelson, 1989). Along those lines, more recent studies demonstrated a strong relation between the stock market liquidity and the business cycle. Indeed, the dynamic relationship between liquidity of the equity market and the vitality of the macro-economy (hereafter macro-liquidity relationship) merits further examination as we try to understand the time variation of equity market liquidity, changes in participation in the equity market, and a set of macro-economic variables. For instance, in some developed nations including Canada, we witness a surge in the equity market performance accompanied by an upturn of market liquidity post-financial crisis. As a result, this higher price liquidity coupled with additional access to capital across the nation could make an increase possible in economic growth (see, e.g., Bekaert, Harvey, & Ng, 2005; Baele, 2005; Madhavan, Proter, & Weaver, 2005). In our study we address the dynamic relationship between macro-economy and stock market liquidity from a Canadian perspective, while taking into account consumer attitudes as a crucial driver (conditioning variable); thus, we are theoretically aligned with some past studies that advocate incorporating this variable.

Moreover, based on the understanding of the dynamic of equity returns illuminated by Knut Wicksell's monetary theory—which simply states that credit drives capital values (equity)—one can conjecture that the recent observed high leverage in the Canadian economy is likely to result in productive insights regarding the relation between capital market and economic growth: notably, that there is a positive correlation between change in consumer attitudes/sentiments (meaning increased optimism about the economy and willingness to invest/consume) and that of consumer credit in Canada. A growth in demand because of increased personal consumption has an impact on increasing the rate of return of firms under the assumption that additional demand

[2] See Amihud, Mendelson, and Pedersen (2005); Donadelli and Prosperi (2012); Bekaert, Harvey, and Lundblad (2007), among many others.

[3] See Cassola, Hortacsu, and Kastl (2009); Cazzavillan and Donadelli (2010); Ivashina and Scharfstein (2010), among many others.

[4] According to data compiled by Bloomberg, Canada and the UK are the only Group of Seven nations—which include the US, Germany, France, Italy, and Japan—that have both a AAA rating and a "stable" outlook.

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