

ICT and the Efficient Markets Hypothesis

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INTRODUCTION

This article represents a preliminary attempt to identify the variables influencing the relationship between technological development and efficiency in the financial markets of a Caribbean economy. The analysis uses qualitative methods only. From the late 1980s, Kitchen (1988) observed, "... the major inefficiency in the capital market is the lack of information..." (p. 48). Two characteristics that differentiate the financial markets of developing countries from those of developed economies, and have an impact on their efficiency are:

1. A small number of investors;
2. Few types of investors;
3. The limited range of financial instruments.

The above render the financial markets inefficient, from the perspective of the Efficient Markets Hypothesis, compared with those of developing countries. As the ICT infrastructure among developing countries varies, the article is limited to one country—Jamaica. The Jamaican financial market was considered a top performer among emerging markets in 1992, based on movements in its stock prices. Following the collapse of the island's financial sector in 1993, the market remained in the doldrums for several years..

The government and the key players in the financial services sector recognized the need to upgrade the technological infrastructure of the financial markets to attract international players and render its operations more efficient and transparent. The technology permits trading in real time, across borders among the three major exchanges in the Caribbean-Trinidad, Jamaica and Barbados.

In the last 12-15 years, in addition to attracting international institutional investors, the Jamaican financial services industry has been actively educating the local individual investor to attract his participation in the financial markets as an individual investor—whether as a holder of a Unit Trust/Mutual Fund, Treasury Bills, Local Registered Stock or as a minority stockholder in a listed company. The Jamaican market, therefore, provides an example of an institution that recognized the importance of the role of ICT (especially Internet-based technologies) in its re-emergence from relative obscurity and as it attempts to facilitate economic development.

The outline of the article is as follows:

1. The role of the financial sector in the development process in an economy and in wealth-creation.
2. The structure of the Jamaican financial market.
3. The underlying theoretical framework—the efficient markets hypothesis and the contribution of 21st century technology to the improved efficiency in the Jamaican financial markets. It assesses measures of the technological development of the country—teledensity and infrastructure development and legal considerations. These are considered important issues for local development as, in addition to international institutional investors, the key players have been actively trying, in recent years, to attract the participation of local individual investors into the market to facilitate a more diverse basis of local wealth creation. In addition, international investors can serve as an invaluable source of capital during a public offer of shares.
4. Issues in customer relationship (client account management) and operations management (back office operations) in the financial services sector that have been, or can be addressed by enhanced technology. These are the key areas of management of financial services that impact directly on market efficiency.
5. Opportunities for new technology product development, training and marketing that may reasonably be considered by software developers, infrastructure providers, and providers of technology training services, with the intention of attracting skilled persons into the field of technology and/or improving the technological infrastructure and applied knowledge of the key players in the financial markets.

BACKGROUND

Martin Sewell, owner of the Web site, <http://www.e-m-h.org>, states that "... The origins of the Efficient Markets Hypothesis (EMH) can be traced back at least as far as the pioneering theoretical contribution of Bachelier (1900) and the empirical research of Cowles (1933). The modern literature in economics begins with Samuelson

(1965), whose contribution is neatly summarized by the title of his article: ‘Proof that Properly Anticipated Prices Fluctuate Randomly’...” Solnik and McLeavy (2004) argue that “the notion of an efficient market is central to finance theory. In an *efficient market*, any new information would be immediately and fully reflected in prices. Because all current information is already impounded in the asset price, only news—that is, unanticipated information—could cause a change in price in the future” (p. 24).

The central concept of this article is that technology facilitates efficient financial markets by making information available to existing and prospective investors on a timely basis. It assumes greater relevance in light of the global nature of financial transactions. An efficient financial market is required to attract global institutional investors to an emerging economy. In addition, it facilitates the wealth creation process among the local populace. The author is unaware of any recent scholarly work that considers the Jamaican financial markets, from the perspective of the Efficient Markets Hypothesis. In the last five years, several governments and international bodies have sponsored conferences and working groups to help developing nations consider the impact of technology on key sectors of the economy. It was argued that technological infrastructure and legal and audit concerns ranked highest in their priorities to develop the national economies. Bridges.org (2001), Digital Opportunity Initiative (2001), Grant (2001), COMNET-IT (2002) and UNCTAD Secretariat (2002) offer similar opinions.

Grant (2001) refers to the work of the E-Commerce working group, a sub-committee of the E-Commerce Committee of Jamaica that identified a number of requirements for the successful implementation of e-commerce in the island. He cites the following:

- i. **Human resources skills:**
 - “Education across all parts of the society in ICT is needed. This is in fact a cross-cutting issue and should be given the highest priority and resources allocated. Some important areas of development for the private and public sector are:
 - The establishment of Life Long Learning facilities to facilitate technology training by older users who may be intimidated by technology.
 - To inculcate a vision of ICT usefulness through training of senior management in IT skills rather than creating an environment where they are forced to use technology” (p. 24).
- ii. **Improved ICT infrastructure:**
 - “Electricity-should be available to all persons in reliable supply.

- Telecommunications to every home and business place and at low cost (VSAT, Fibre, Wireless, dial-up).
- Database Security, Dependable backup, redundancy, disaster mitigation, and when all else fails, adequate consequential loss insurance” (p. 24).

The financial sector was not mentioned in this discussion, possibly because the financial markets were well underway, with the process of upgrading their technological base. In Jamaica, the thrust toward improved technological infrastructure was largely driven by the private sector (viz. the Stock Exchange, stockbrokers and investment bankers), which felt the need to meet international standards to attract the international investment community. The Caribbean and international academic communities appear not to have carried out significant research on this topic. Hopefully, this article will stimulate further discussion and writings on this issue within the development, academic and professional communities.

FINANCIAL MARKETS AND ECONOMIC DEVELOPMENT: THE EFFICIENT MARKETS HYPOTHESIS

The Efficient Markets Hypothesis

Reilly and Brown (2000) state that the most basic form of the efficient markets hypothesis—the weak form—“...assumes that current stock prices reflect all *security-market information*, including the historical sequence of prices, rates of return, trading volume data, and other market-generated information such as odd-lot transactions, block trades, and transactions by exchange specialists or other unique groups” (p. 215). An efficient market, therefore, has few opportunities for arbitrage, as imbalances are immediately corrected by the immediate dissemination of information using ICT.

The Role of Financial Markets in the Development Process

Finance is considered the “lubricant” of the wheels of the productive sector. ICT have dramatically transformed the manner in which the financial services sector of developing economies operates. As with other industries, ICT help financial markets become more effective, customer-oriented and transparent in their operations. ICT facilitate the investment decision-making process as follows:

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