

# **The Potential Effects on the Movie Industry of Futures Trading on Film Revenues**

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# The Potential Effects on the Movie Industry of Futures Trading on Film Revenues<sup>1</sup>

## I. Executive Summary

This report addresses the key questions that have recently been raised about the introduction of a contract such as the proposed Domestic Box Office Receipt (DBOR) futures instrument and the associated Cantor Exchange. The report has three key components that address this important issue from several perspectives.

First, using classic financial principles that describe what effective futures contracts and financial markets should contain, I find that the DBOR contract and Cantor Exchange meet these criteria and thus this contract market represents a legitimate and effective vehicle to conduct futures trading in the area of first-run movies. In addition, the role of speculators within a futures market is clarified using the U.S. Commodity Futures Trading Commission's (CFTC) own description of these market participants. Contrary to some of the recent media coverage, speculators are not "gamblers" or "evil" and thus these investors provide a useful economic role in ensuring liquidity and greater price transparency within a futures market.

Second, this report also demonstrates how the introduction of a DBOR market can benefit not only the direct participants in such a futures market but also help other players in the movie industry such as consumers and the movie studios. The main benefits of introducing a DBOR futures market are:

- 1) Better risk management for investors and other participants in the movie business,
- 2) Increased new investment in the movie industry from current film investors,
- 3) Additional investment from new investors that are now attracted to the film industry, and
- 4) Greater transparency which yields useful price signals for the entire economy.

The report also examines two potential costs of such a market related to the possibility of market manipulation and / or insider trading. However, the financial incentives of the Cantor Exchange and the clear mandate of the CFTC to ensure that futures markets are fair to all participants indicate that both of these organizations have the proper motivation to actively employ the necessary surveillance and enforcement systems in order to mitigate the possibility of market manipulation and / or insider trading.

Lastly, this report also reviews the academic literature on this subject and I find that there is both sound financial theory and solid empirical evidence that support the notion that the benefits of introducing a futures market can greatly outweigh the potential costs noted above. Empirical evidence over the past two decades not only in the U.S. but also more recent evidence from numerous countries around the world confirm the positive effects of introducing a futures market

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<sup>1</sup> To better inform those parties interested in understanding the role of futures trading on first-run movies, Cantor Exchange, Inc. commissioned the author to write this report describing the new potential market for enabling investors to manage risk and trade these new contracts. This article presents my analyses and opinions only and does not necessarily represent the opinions of the sponsor of this project. The author retained full editorial control over the content and conclusions of this report.

in terms of increasing price transparency, providing better risk management, reducing price volatility, and increasing the liquidity of financial markets.

## **II. Introduction / Background**

This report examines the potential benefits and costs associated with introducing a set of futures contracts based on the revenues of a first-run movie's initial four-week box office revenues. To begin, it is helpful to review the classic principles that underlie all effective financial markets and futures contracts. In addition, this section explains the fundamental role that traders who are not hedging an underlying exposure (typically referred to as speculators) can play within a properly functioning financial market.

### **Key attributes of a financial market:**

There is a well-established set of academic literature on the role of financial markets within an economy. In particular, seminal work by Hayek (1945), Debreu (1959), and Arrow (1964) show that an effective financial market can serve two economically important functions: 1) the market can help investors allocate and share risk via trading and hedging activities, and 2) the market can communicate, via public disclosure of price and volume data, important information about the value of financial securities to all members of society (not just the counterparties to the transaction). This latter function is extremely useful because all participants in the economy (not just the specific financial market) can use these price and volume data as signals of the relative supply and demand for the relevant securities which, in turn, allows all members of society to make more informed economic decisions.

Given the proposed market structure of the Cantor Exchange, it meets the above criteria of an effective financial market because it will: 1) allow investors to hedge their exposure to the financial performance of specific movies, and 2) provide 24/7 trading opportunities and real-time reporting of transactions via a web-based data dissemination service. Thus, investors in this exchange will be able to trade, hedge, and observe the price and volume activity in a transparent manner.

### **Key attributes of a futures contract:**

For a futures contract to be a viable, effective tool for risk management and trading, it should have the following qualities:

- An objectively verifiable “commodity” that is to be traded (i.e., the contract's value can be independently and objectively determined by market participants)
- Standardized terms (documentation that states exactly what is the amount of the contract, expiration months, last trading day, settlement procedures, etc.)
- Clearing mechanism (a clearinghouse reduces counterparty credit risk and improves price transparency so that all market participants can observe the prices and quantities of the contract that have been traded on a daily basis)

- Margin system (this enables all futures positions to be marked to market on a daily basis and thus reduces the overall counterparty credit risk within the clearinghouse and between the rest of the market participants)
- Low transaction costs (this encourages greater trading activity and thus higher levels of liquidity that benefit all market participants)
- Open, easy access to the futures market (by permitting direct access to the market for all investors, the market's liquidity can be maximized)

The DBOR futures contract, as proposed by the Cantor Exchange, Inc., meets all of the above criteria for a futures contract.

### **The role of speculators in a futures market:**

Although the popular press and other parties might portray speculators in the futures markets as “gamblers” or “evil,” the economic and financial reality is that speculators play an important role within a futures market (see Appendix 1 for some brief excerpts from recent media coverage of this issue). In particular, speculators provide much-needed liquidity to the market by, for example, taking the other side of a transaction in which a person wants to hedge. For example, a consumer of corn such as a cereal producer might want to hedge against increases in the price of corn and thus might want to buy corn in the futures market. If there is no one who owns corn (such as a farmer) who is willing to sell corn in the futures market, then the speculator can step in and play a key role by selling the corn on speculation that the price will fall. The speculator's trade enables the cereal producer to hedge its position and thus help this firm manage its risks more efficiently.

In fact, the CFTC itself recognizes this important role that speculators play, as shown by the following excerpt from their web site ([www.cftc.gov](http://www.cftc.gov)):

#### **THE ROLE OF THE SPECULATOR**

A speculator is one who does not produce or use a commodity, but risks his or her own capital trading futures in that commodity in hopes of making a profit on price changes. While speculation is not considered one of the economic purposes of futures markets, speculators do help make futures markets function better by providing liquidity, or the ability to buy and sell futures contracts quickly without materially affecting the price. Long and short hedgers may not be sufficient to create a liquid futures market by themselves. The participation of speculators willing to take the other side of hedgers' trades adds liquidity and makes it easier for hedgers to hedge.

In sum, using the fundamental criteria noted above that define what effective futures contracts and financial markets should possess, I find that the DBOR contract and Cantor Exchange meet all of these criteria and, accordingly, create a valid means of providing both hedgers and speculators with an effective way to conduct futures trading in the area of first-run movies. The above discussion also dispels the belief that speculators are inherently bad for a financial market and the economy in general.

### **III. The Main Benefits and Costs of Film-related Futures Contracts**

Film-related futures contracts have four main benefits and two potential important costs, as noted below.

#### **Benefit 1. Better Risk Management for Investors and other Participants in the Movie Industry**

When discussing the role of a futures contract such as the Domestic Box Office Receipt (DBOR) contract, it is most important to keep in mind the hedging, or risk management, feature of these contracts. The use of DBOR futures allows existing parties with material investments in the success of a movie to hedge their risks (e.g., not only the financial investors in the film but all of the movie theater operators around the world can be at risk of having a large number of empty seats in their theaters if a film is unsuccessful). Thus, there is a genuine need for these investors to hedge some of the risk associated with their investments in time, money, and other resources associated with a specific movie.

Retail consumers of movies could also benefit by participating in the market for DBOR contracts. For example, if their trades in this market are profitable, then this can offset the cost of purchasing movie tickets, DVDs, and other movie-related goods and services. This type of interest on the part of retail consumers could also spur greater consumption of movies, DVDs, etc. as these individuals might be more interested in going to additional upcoming movies that they would not have otherwise been aware of.

#### **Benefit 2. Stimulates New Investment from Current Investors in the Movie Industry**

By enabling both large film investors / financiers and theater operators to hedge in the DBOR market, another benefit is created, namely, this hedging capability can stimulate additional investment from these existing participants in the movie business. Thus, by using DBOR futures to hedge, say, half of a film investor's investment in one movie, this investor could then invest in a second, additional movie and hedge half of his/her investment in this second film. In this way, the investor can invest in two movies for the same amount of net risk exposure as he/she would have normally done for one movie when there was no DBOR market. Consequently, more investment capital can be provided by current film investors / financiers to the movie studios that produce these films. So, both investors and the movie studios can benefit through the increased amount of capital available for investment in the movie industry. Consumers who purchase movies can also benefit from this additional investment if the movie studios produce films of greater quality, quantity, and variety.

#### **Benefit 3. Attracts Additional Investment from New Investors to the Movie Industry**

Another side benefit of an active DBOR futures market is that a "positive externality" can exist between this futures market and potential new film investors and theater operators.<sup>2</sup> For

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<sup>2</sup> A "positive externality" is a benefit that some individuals or firms receive without paying the full cost for this benefit due to the economic activities of other unrelated parties. For example, if two people own cell phones, then a third person can benefit by calling these individuals even though he / she might not own a cell phone. In turn, the

example, the hedging and trading activities of existing investors and theater operators can have a positive effect on individuals and firms that are not currently involved in the film business. The economics of positive externalities, sometimes referred to as “network effects,” indicates that the creation of an active DBOR market can encourage new investors and other firms to become interested in investing in the movie business (either by investing directly in first-run movies, building new theaters / DVD stores, or trading in the DBOR market).

In the past, these investors and firms might have been interested in the movie business but deemed it too risky to invest in. However, these potential participants may now invest in the movie industry because the DBOR contract provides these players with a cost-effective way to mitigate some of their movie-specific risk. This will have the positive effect of stimulating greater investment in not only first-run movies but also the entire movie business infrastructure (theaters, stores, rental kiosks, etc.). In turn, this can help stimulate employment in various areas such as the film studios, theater operators, DVD rental stores, and even the construction industry to some extent.

#### **Benefit 4. Greater Transparency yields Useful Price Signals for the Entire Economy**

By developing an active DBOR market, not only do the market participants benefit from the greater “price discovery” created by trading this futures contract but also non-participants can benefit because they can use the transaction price and trading volume data as useful “price signals” about the anticipated supply, demand, and growth prospects for various films.<sup>3</sup> This information, for example, can be useful to a movie studio which does not even participate in the DBOR market because the price and volume data from this market can help the studio decide to invest more in, say, 3-D movies because the DBOR futures market might be showing strong price gains for contracts related to current 3-D films. By monitoring prices and volume in the movie futures market, the relatively scarce economic resources of any one film studio can then be allocated in a more efficient manner. This, in turn, benefits the entire economy because better price and volume signals from the futures market can lead to more effective investment decisions by studios, theater operators, retail DVD stores, and consumers. Given the relatively flat / stagnant trend in movie box office receipts and ticket sales over the past decade, the ability to make better investment decisions should help stimulate growth and innovation in the U.S. movie industry (see the table in Appendix 2 for more details).

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benefit to this third person for purchasing a cell phone might be greater than the phone’s cost because he / she can now call several other people in a more convenient way.

<sup>3</sup> By “price discovery,” I mean the process by which traders submit orders to buy and sell in order to identify the “true” equilibrium price for the security (i.e., where supply equals demand for a film’s expected revenues). Interestingly, it could be that the film studios are concerned that they will lose their monopoly position on this price discovery process because information about various movies will be published by the futures exchange which *all* market participants can then observe and analyze. This is the type of information that is currently held privately by the film studios and thus some of these firms might be concerned with losing their informational edge to non-Hollywood participants in the futures market.

### **Potential Cost 1. The Possibility of Market Manipulation**

The biggest “cost” (as opposed to benefit) of the proposed DBOR futures contract is the possibility that the market could be manipulated by one or more traders for their personal gain by artificially pushing prices up or down and then profiting from a sudden reversal in prices. In any market (not just futures contracts) where there is low liquidity, this risk is present. The key to minimizing this risk and lowering the potential “cost” associated with DBOR futures trading is through diligent monitoring and active enforcement of the rules established by the CFTC and the Cantor Exchange itself. Otherwise, investors will not want to trade on an exchange where it is perceived that prices are easily manipulated and thus the market is “rigged” against these investors.

Since the Cantor Exchange has a strong and direct incentive to maximize the DBOR market’s trading volume and the CFTC’s role is to ensure that all futures markets are fair to all investors, both of these parties are motivated to ensure that the participants in the DBOR market are acting in a responsible and fair manner. Thus, the Cantor Exchange has set up monitoring / surveillance systems which can thwart the efforts of potential price manipulators and ban them from the trading system. In addition, the CFTC has its own sophisticated surveillance and enforcement systems and staff which will be monitoring the trading activity in the DBOR market and can impose severe penalties for those parties that attempt to distort market prices.

### **Potential Cost 2. The Possibility of Insider Trading**

Another potential cost associated with not only the proposed DBOR futures market but any financial market is the problem related to insiders trading on material, non-public information. For example, some have voiced concern that employees of film studios, studio sub-contractors, or other individuals would exploit their inside information about the prospects for a film via the DBOR futures market. However, this problem is no different than the problem faced by the employees of a large consumer of corn (e.g., a cereal maker) or the corn farmer himself, for that matter, who potentially has inside information on the supply and demand for corn which could be exploited in the corn futures market. Thus, the CFTC has decades of experience dealing with this issue and has demonstrated that it can effectively monitor this issue to ensure a fair and level “playing field” for all futures market participants. In addition, the Cantor Exchange itself has strong financial incentives to ensure the DBOR market is one of high integrity.

In sum, the four primary benefits noted above are quite powerful while the two potential costs can be properly mitigated by effective surveillance and enforcement systems operated by both the Cantor Exchange and the CFTC. Overall, the main benefits described above appear to clearly outweigh the potential costs associated with introducing the DBOR futures contract. Next, I turn to the academic literature to see what effect prior introductions of derivatives markets have had on existing financial markets. This review of both finance theory and empirical evidence can help inform us about how the introduction of the DBOR market might affect the movie industry in the future.

## **IV. Review of the Relevant Literature on the Impact of Introducing a Derivatives Contract into an Existing Financial Market**

### **Theoretical Models of Derivatives Introduction**

Given the above discussion of the key features of well-designed financial markets and futures contracts, as well as an assessment of the key benefits and costs of introducing the DBOR contract, it is instructive to review the relevant theoretical and empirical academic literature. In this way, one can see how prior introductions of derivatives contracts have affected the efficiency of an underlying “cash” market (also referred to as a “spot” market). By doing so, one can gain greater confidence regarding how the introduction of the DBOR contract could affect the existing market for first-run movies.

Although, strictly speaking, there is no cash, or spot, market for the secondary trading of movie tickets, there is clearly a large market for the primary sale of movie tickets by theater operators.<sup>4</sup> That is, there is no active market for consumers to trade movie tickets amongst themselves in a secondary market but, as the table in the Appendix 2 shows, there is a \$10 billion annual market for the primary sale of movie tickets by theater operators. Thus, one can view this market as a primary “spot” market for movie tickets.

Initial theoretical work on the impact of derivatives contracts on underlying cash / spot financial markets builds upon the seminal work by Kyle (1985). In Kyle’s model, asymmetric information is present in the financial market, which meant that some traders have better information (i.e., they are “informed” traders) while others have less information (they are described as being either “uninformed” traders or serving as a single “market maker” in the financial asset).

The above issue of asymmetric information is an important attribute of a real-world financial market because it is clear that some traders are more sophisticated and better-informed about the future value of a security (e.g., mutual fund or hedge fund managers) than other traders (e.g., small retail investors and market makers). Since informed traders, by definition, know more than the uninformed traders, the less-informed traders will typically lose, on average, when they trade with their better-informed counterparts. Since an uninformed trader such as a market maker knows this, this person will try to infer the presence of informed traders by carefully observing the flow of orders submitted to the financial market.

Based on the Kyle model, the bottom line is that asymmetric information can lead traders to behave strategically and can ultimately affect the pricing of financial assets, as well as the trading volume and price volatility associated with these assets. In general, investors will typically pay less for an asset if it is traded in a market with high levels of asymmetric information and uninformed investors are also less likely to participate or trade in such a market. The practical implication of the model is that well-designed financial markets such as the Cantor Exchange’s proposed DBOR market can reduce the problems associated with asymmetric information by promoting greater price transparency and increasing the public disclosure of

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<sup>4</sup> A primary market is one where a security is sold for the first time such as the initial public offering (IPO) of common equity in a new company. A secondary market is one which trades securities that have been previously issued. In addition, a “cash” or “spot” market is one in which an investor can purchase or sell a security today (as opposed to sometime in the future, as in a futures market).



information related to the financial asset. In turn, this can lead to greater liquidity, lower price volatility, and greater trading volume in both the futures and cash markets.

Building upon Kyle (1985), research articles such as Grossman (1988), Detemple and Selden (1991), Subrahmanyam (1991), Jarrow (1994), Huang and Wang (1997), and Cao (1999), among others, examined how asymmetric information and traders' strategies are affected when a derivatives market is introduced for a corresponding spot market. In addition, without relying on an asymmetric information model, Silber (1985) shows that a futures market can potentially enhance the efficiency of a spot market by enabling market makers in the cash asset to hedge more effectively.

By focusing on the hedging capabilities of a derivatives market, Grossman (1988) demonstrated that the introduction of a derivatives contract can help people aggregate all information related to investors' hedging strategies which can then reduce the level of asymmetric information in the overall market. In turn, this reduction in asymmetric information can reduce the price volatility of both the derivative contract and underlying cash asset.

Detemple and Selden (1991) examine how the introduction of a call option market can increase the underlying price of the cash asset due to the simultaneous pricing of both the call option and this cash security. Cao (1999) examines the incentives to collect information on the underlying cash asset and finds that investors have greater motivation to gather this information and thus cash prices are higher and volatility is lower when a derivatives market exists. In general, all of these models suggest that the introduction of a derivatives market can be positive in terms of raising the value of the cash security and reducing price volatility. In addition, a side benefit of these two positive effects is that it encourages more investors to participate in these markets, thus making them more liquid and efficient. Thus, a "virtuous" cycle between the derivatives and cash markets can be created due to the above effects.

In contrast to the above models, Subrahmanyam (1991), Jarrow (1994), and Huang and Wang (1997) cast a more ambiguous light on the effects of a derivatives market. For example, Subrahmanyam (1991) compares the introduction of a stock index futures market to the cash market for the securities that comprise this stock index. The author's focus is on where discretionary traders choose to trade. In the model, there are some traders who have discretion over where and when to trade and thus these individuals face a choice of whether to trade in the cash or derivatives markets.

The model suggests there is a trade-off between trading in the index futures market where there is potentially less asymmetric information (because a stock index will diversify away some of this information-related risk) and the cash market where there might be greater liquidity (because larger, informed traders might prefer to trade in this market). Thus, the model shows that the effect on the underlying cash asset's price is ambiguous and is dependent on the discretionary traders' choices based on the above trade-off. For example, if the discretionary traders all send their orders to the derivatives market, the liquidity in the cash market might dry up and cause the cash price to fall and become more volatile. Conversely, if these traders choose to route their orders to the cash market, then cash prices will be higher and volatility lower. In this context, it is ultimately an empirical question as to which effect dominates.

Huang and Wang (1997), using a different theoretical framework, come up with a similar conclusion in that the incentives to collect information are greater when a derivatives market is present but this positive effect is counter-balanced by the fact that increased levels of trading activity can result in noisier price signals in the cash market. Thus, once again, the question of which effect is predominant becomes an empirical one.

Jarrow (1994) approaches the problem from a different perspective by examining an investor's incentives to manipulate prices when an options market is introduced for an underlying cash asset. The model demonstrates that investors might try to manipulate prices to take advantage of arbitrage opportunities between the cash and options markets. However, Jarrow (1994) also proves how this type of manipulation can be easily avoided by applying a properly specified variant of the conventional binomial option pricing model. Thus, by using the appropriate option pricing model, the author shows that the incentives to manipulate prices can be effectively eliminated.

Summing up the theoretical literature, one can see that all of the models explain how the introduction of a derivatives market such as the DBOR futures contract can improve the welfare for society by providing more accurate price signals about the supply and demand for the underlying cash asset, as well as by reducing price volatility and increasing market liquidity. However, as noted above, some theoretical models indicate that there may be a trade-off between these benefits and other factors such as the decisions of discretionary traders and the level of trading activity in the underlying cash market. Accordingly, I now turn to a review of the relevant empirical literature to see which effects are dominant in real-world financial markets.

### **Empirical Tests related to Derivatives Introductions**

Early empirical research related to the effects of derivatives contracts on cash financial markets typically focused on how the introduction of a futures contract on a stock index such as the S&P 500 affected the price volatility of the underlying cash market for the 500 stocks that were actively traded in secondary markets such as the New York Stock Exchange (NYSE) and Nasdaq. In general, this initial research showed that futures markets can increase trading activity but the effect on price volatility is somewhat muted except on the expiration day of the futures contract (and even then, the increase in volatility is short-lived, e.g., within one trading day). For example, Stoll and Whaley (1987, 1988), Edwards (1988), and Harris (1989) all study the S&P 500 futures contract and its impact on the cash market for the stocks that comprise this index.

Edwards (1988) finds that stock price volatility has been lower since the introduction of stock index futures contracts while Harris (1989) observed no economically significant change in volatility. In contrast, Stoll and Whaley (1987) document that trading volume and price volatility can increase at the time of the futures contract's expiration but this effect is temporary and is actually less than the impact of a typical "block trade" in the underlying cash market.<sup>5</sup> In a follow-up article, Stoll and Whaley (1988) summarize the important role that a financial market (in this context, a market for stock index futures) can play in terms of communicating

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<sup>5</sup> A "block trade" is typically defined as a trade of 10,000 shares or more in a single stock.

relevant information to all members of society: “Financial markets serve as the economy's messenger. ... Index futures expand the number of routes through which messages can travel.”

Overall, the early empirical evidence based on U.S. markets supports the notion that price volatility and trading volume in the underlying cash market can be affected but not in an economically significant way during normal market conditions. Thus, this initial strand of the literature suggested that, on average, the effect of introducing a futures market on stock prices was neutral in that it created neither unusually greater nor lower volatility.

After the first wave of empirical studies during the mid to late 1980s, more sophisticated empirical tests were performed during the 1990s and the most recent decade. For example, Detemple and Jorion (1990) find significant positive support for Grossman's (1988) prediction that the introduction of options can increase underlying stock prices and reduce volatility. In contrast, tests of Subrahmanyam's model in Jegadeesh and Subrahmanyam (1993) show an economically *insignificant* increase in the average proportional bid-ask spread for a set of stocks that included the securities that comprise the S&P 500. The authors also report an insignificant increase in level of asymmetric information within the cash market. In general, these relatively insignificant results indicate that the S&P 500 futures market does not harm the cash market for S&P stocks and thus provides neutral, or mixed, evidence in support of the positive effects espoused by many of the theoretical models noted above.

Easley, O'Hara, and Srinivas (1998) examine the market of stock options in the U.S. to determine the informativeness of this derivatives market vis-à-vis the underlying cash market for these stocks. Consistent with the theories that show a positive role for derivatives markets such as Grossman (1988), Detemple and Selden (1991), and Cao (1999), Easley et al. (1998) report that option trading volume can be a leading predictor of cash stock prices. The authors conclude that this result could be due to the possibility that informed traders prefer to trade in the options market and thus these option traders' actions help reveal useful information that can enhance stock prices in the cash market for all investors.

Most notably, Hasbrouck (2003) studied the market for the S&P 500 stock index by analyzing which of the following cash and derivatives markets contributed the most information to setting prices for the cash value of this index (i.e., floor-traded index futures contracts, exchange-traded funds (ETFs), electronically traded, small-denomination futures contracts (E-minis), and sector ETFs that sub-divide the index into sub-industry portfolios). The author finds that the S&P 500 index (as well as the Nasdaq-100 index) receives its most informative price signals from the E-mini futures market.

The above empirical finding is another important example of the positive benefits associated with the introduction of a futures market that were predicted by the theoretical models of Grossman (1988), Detemple and Selden (1991), and Cao (1999). It is also particularly striking that the smaller E-mini futures market leads the way in terms of setting prices in the market because these contracts were specifically designed to attract smaller, retail investors who cannot generally afford the larger, more expensive floor-traded futures contract. Thus, the results are also consistent with Subrahmanyam's model because the evidence suggests the positive effects of trading with a futures contract outweigh the potentially greater liquidity in the cash market

(and so even retail investors prefer the futures market over the cash market in this case). In turn, this suggests the positive effects of introducing a futures market dominate the potential negative factors of such a market.

The results of Hasbrouck (2003) have also spawned somewhat of a global search to see if Hasbrouck's findings can be replicated in other, non-U.S. markets where futures contracts have been introduced. For example, Illueca and Lafuente (2008) applies Hasbrouck's approach to a foreign market which introduced a retail-oriented stock futures contract. Specifically, the authors examined the effect of introducing the Ibox 35 mini-futures contract in the Spanish stock market. By allowing retail investors to participate more actively in the futures market for this Spanish stock index, Illueca and Lafuente find prices in this new futures market are highly informative and underlying stock price volatility does not increase.

Most importantly, the above results are not isolated to the U.S. and Spain. For example, additional results reported in recent research studies such as Bhaumik and Bose (2009), Drimbetas, Sariannidis, and Porfiris (2007), and Ozun and Erbaykal (2009), among others, show that derivatives trading can be beneficial to cash markets in many non-U.S. markets such as India, Greece, and Turkey. Thus, these additional results not only replicate Hasbrouck's earlier U.S. findings but also provide empirical evidence on a global scale in support of the positive theories of derivatives markets noted in the prior sub-section of this report.

In sum, both finance theory and empirical tests of real-world derivatives markets demonstrate that the benefits of introducing a derivatives security such as the DBOR futures contract can have a positive impact on an economy by fostering greater information disclosure, lower volatility, and greater liquidity. All of these factors, in turn, can benefit society in general by allowing people to make more efficient financial and economic decisions.

## **V. Conclusion**

This report has shown how the introduction of a contract such as the proposed DBOR futures instrument and the associated Cantor Exchange might affect the market for first-run movies. Using the classic, fundamental criteria that describe what effective futures contracts and financial markets should possess, I find that the DBOR contract and Cantor Exchange meet these criteria and thus represent a valid vehicle to conduct futures trading in the area of first-run movies. In addition, the role of speculators within a futures market is clarified using the CFTC's own description of these market participants. Contrary to the belief of some, speculators are not "gamblers" and thus these investors provide a useful economic role in ensuring liquidity and greater price transparency in a futures market.

This report also demonstrated how the introduction of a DBOR futures market can benefit not only the participants in such a market but also help other players in the movie industry such as consumers and the movie studios. The main benefits of introducing a DBOR futures market are:

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Two potential costs of such a market related to the possibility of market manipulation and / or insider trading are also examined. However, the financial incentives of the Cantor Exchange and the clear mandate of the CFTC to ensure that futures markets are fair to all participants indicate that both of these organizations have the proper motivation to actively employ the relevant surveillance and enforcement systems in order to mitigate the possibility of market manipulation and / or insider trading.

This report also reviewed the academic literature on this subject and I find that there is both strong financial theory and robust empirical evidence that support the notion that the benefits of introducing a futures market can outweigh the potential costs noted above. Empirical evidence over the past two decades not only in the U.S. but also more recent evidence from several countries around the world confirm the positive effects of introducing a futures market in terms of increasing price transparency, providing better risk management, reducing price volatility, and increasing the liquidity of financial markets.

## References:

- Arrow, K. 1964. The role of securities in the optimal allocation of risk-bearing. *Review of Economic Studies* 31, 91–96.
- Bhaumik, S., and Bose, S. 2009. Impact of Derivatives Trading on Emerging Stock Markets: Some Evidence from India. *Comparative Economic Studies* 51(1), 118-137.
- Cao, H. H. 1999. The effect of derivative assets on information acquisition and price behavior in a rational expectations equilibrium. *The Review of Financial Studies* 12, (1); 131-
- Debreu, G. 1959. *Theory of Value*. New Haven, CT: Yale University Press.
- Detemple, J., and Jorion, P. 1990. Option listing and stock returns: An empirical analysis. *Journal of Banking & Finance* 14(4), 781-801.
- Detemple, J. and Selden, L. 1991. A General Equilibrium Analysis of Option and Stock Market Interactions. *International Economic Review* 32(2), 279-303.
- Drimbetas, E., Sariannidis, N., and N. Porfiris. 2007. The effect of derivatives trading on volatility of the underlying asset: evidence from the Greek stock market. *Applied Financial Economics* 17(2), 139-157.
- Easley, D., O'Hara, M., and Srinivas, P.S. 1998. Option volume and stock prices: Evidence on where informed traders trade. *The Journal of Finance* 53 (2), 431-465.
- Edwards, F. R. 1988. Does futures trading increase stock market volatility? *Financial Analysts Journal* 44 (January-February), 63-69.
- Grossman, S. J. 1988. An analysis of the implications for stock and futures: price volatility of program trading and dynamic hedging strategies. *Journal of Business* 61, 275-298.
- Harris, L. 1989. S&P 500 cash stock price volatilities. *Journal of Finance* 44, 1155-75.
- Hasbrouck, J. 2003. Intraday price formation in U.S. equity index markets. *The Journal of Finance* 58(6), 2375-2399.
- Hayek, F.A. (1945) The use of knowledge in society. *American Economic Review* 35, 519–530.
- Huang, J. and Wang, J., 1997, Market structure, security prices, and informational efficiency, *Macroeconomic Dynamics* 1, 169-205.
- Illueca, M., and Lafuente, J.A. 2008. Introducing the mini-futures contract on Ibex 35: implications for price discovery and volatility transmission. *Spanish Economic Review* 10(3), 197-219.

Jarrow, R. A. 1994. Derivative securities markets, market manipulation, and option pricing theory. *Journal of Financial and Quantitative Analysis*, 29(2), 241-261.

Jegadeesh, N., and Subrahmanyam, A. 1991. Liquidity effects of the introduction of the S&P 500 index futures contract on the underlying stocks. *Journal of Business* 66, 171-182.

Kyle, A. J. 1985. Continuous auctions and insider trading. *Econometrica* 53: 1315-1335.

Ozun, A. and Erbaykal, E. 2009. Detecting risk transmission from futures to spot markets without data stationarity :Evidence from Turkey's markets. *The Journal of Risk Finance* 10(4), 365-376.

Silber, W. L. 1985. The economic role of financial futures. In A. E. Peck (ed.), *Futures Markets: Their Economic Role*, 83-114. Washington, D.C.: American Enterprise for Public Policy Research.

Stoll, H. R., and Whaley, R. E. 1987. Expiration day effects of index options and futures. *Financial Analysts Journal* 43 (March): 16-28.

Stoll, H. R., and Whaley, R. E. 1988. Volatility and futures: Message versus messenger. *Journal of Portfolio Management* 14(2), 20-22.

Subrahmanyam, A. 1991. A theory of trading in stock index futures. *Review of Financial Studies* 4(1), 17-51.

## **Appendix 1. Excerpts from Selected Business Media articles.**

**Excerpt from *Christian Science Monitor* article on 3/29/10 (Gloria Goodale and Dan B. Wood, “Trading 'movie futures' like pork bellies? MPAA fights the idea.”)**

### **Speculation isn't inherently bad**

While the industry registers its protests, media and financial observers suggest that the issue is more complicated.

“The MPAA’s concerns are a bit overblown – these claims against ‘evil’ speculators [are] age-old and ring a bit hollow because [they] ignore potentially very useful price signals,” says Michael S. Pagano, professor of finance at the Villanova University School of Business in Pennsylvania.

“Speculators are not, by definition, bad for society,” he says. “In fact, they can be quite good by providing liquidity and price signals that would not exist if these players were not present in the market.”

**Excerpt from *Christian Science Monitor* article on 4/9/10 (Dan B. Wood, “Big screen battle: Hollywood vs. box office speculators”)**

### **Legalized gambling?**

The Chicago-based firm, Veriana, carries on its website this rebuttal, written by the Futures Industry Association (FIA):

“The MPAA has asserted that futures trading is a form of ‘legalized gambling’ that has no commercial interest or value to the public. Nothing could be further than the truth. Futures markets have proven to be vitally important mechanisms for risk management, as evidenced by the phenomenal growth in the use of futures contracts by a wide range of commercial and industrial enterprises, both here and abroad.”

FIA also counters MPAA claims that these new contracts could lead to “rampant speculation and financial irresponsibility.... It is clear that the MPAA is not familiar with the futures markets or the regulatory framework within which they operate.”

Industry observers similarly line up on both sides of the issue. “I agree wholeheartedly with the MPAA and the movie industry who hold that this is pretty much a thin veil for basic gambling,” says Chris Lanier, president of Motion Picture Intelligencer, a box office prediction firm. “If you want to lose all your money that badly, why not just go to Las Vegas?” And Douglas Gomery, a retired professor of the economics of cinema at Maryland University, has called the idea “gambling, pure and simple.”

But Michael S. Pagano, professor of finance at the Villanova University School of Business, says there can be some legitimate reasons to have such an exchange.



### **New investors, more capital**

“In particular, the trading of these contracts gives useful information to all market participants about the demand, profitability, and growth potential of various types of movies, including the film studios,” Pagano says. “The exchanges can aid in the movie industry because film investors will now have a way to hedge their investments which, in the end, can attract new investors and generate more capital from existing investors.”

He surmises other reasons for the vehement industry resistance.

“It could be that the film studios are concerned that they will lose their monopoly position on information about various movies because the futures exchange will publish information which all market participants can then observe and analyze,” says Pagano. “This is the type of information that is currently held privately by the film studios and thus they could be fearful of losing their informational edge to non-Hollywood players.”

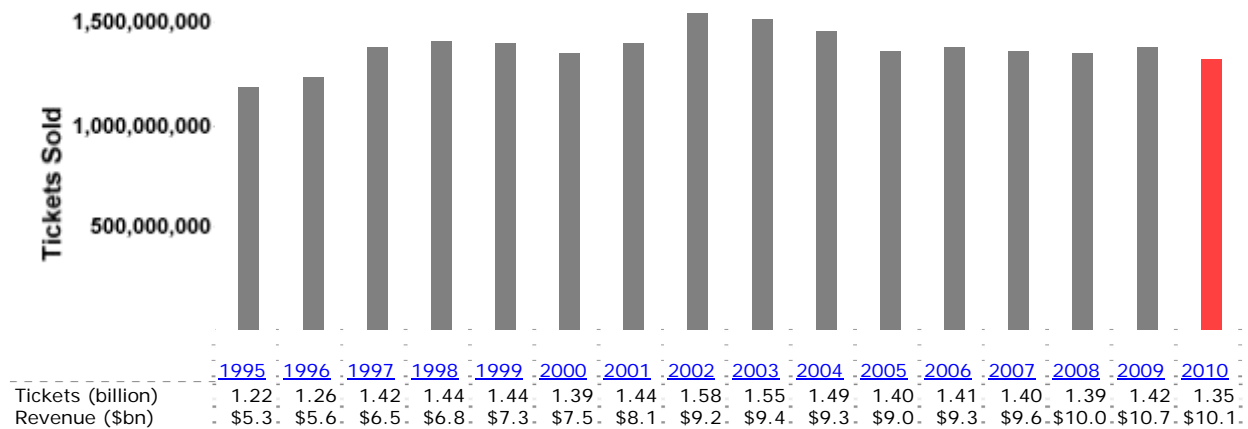
As debate continues to heat up prior to the CFTC’s decision, Pagano says one concern of the film studios that is correct pertains to market manipulation.

“It is crucial that the exchange operator ... create a set of trading rules and monitoring systems to ensure the market is a level playing field for all participants,” he says. “Because if it is perceived to be a rigged market, then retail investors and possibly other market participants can be taken advantage of and this could also be disruptive to the film studios’ operations.”

## Appendix 2. Historical Data on Movie Ticket Sales and Revenue (1995-2010)

### Annual Ticket Sales

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**Note 1:** Figures for 2010 are at an annualized rate.

**Note 2:** in order to provide a fair comparison between movies released in different years, all rankings are based on ticket sales, which are calculated using average ticket prices announced by the MPAA in their annual state of the industry report.

Data source is the movie industry data web site: [www.the-numbers.com/market](http://www.the-numbers.com/market)

## **Biographical Summary for:**

**Michael S. Pagano, Ph.D., CFA**  
*Villanova University*

### **Recent Research**

**Michael S. Pagano** is a Professor of Finance at Villanova University. Professor Pagano has conducted several empirical analyses related to various issues in market microstructure, financial institution management, risk management, international finance, cost of capital estimation, and interest rate determination. He has published in numerous finance journals such as the *Journal of Financial Economics*, *Journal of Banking and Finance*, *Journal of International Money and Finance*, *Journal of Portfolio Management*, and the *Financial Analysts Journal*. Professor Pagano serves on the editorial boards of two academic journals, the *International Journal of Managerial Finance* and the *Review of Pacific Basin Financial Markets and Policies*. Professor Pagano has also been a Fulbright Scholar at the University of Costa Rica, as well as a visiting professor at the University of Otago in New Zealand and the American University of Rome, and has received awards for both teaching excellence and academic scholarship.

### **Business, Consulting, and Service Experience**

Prior to earning his doctorate and joining the Villanova University faculty, Professor Pagano spent over 10 years in the financial services industry. He holds the Chartered Financial Analyst (CFA<sup>®</sup>) designation and has experience both in commercial lending activities at Citibank and in investment valuation analysis at a financial consulting firm, International Capital Markets Corp., as well as Reuters PLC. At Villanova University, he has participated in numerous college and university initiatives such as launching the Executive MBA program, the M.S. in Finance program, the Mid-Atlantic Research Conference in Finance (MARC), the Institute for Research in Advanced Financial Technology, and the award-winning Applied Finance Lab. In addition to his duties at Villanova University, Professor Pagano serves as a member of FINRA's Market Regulation Committee and has been a consultant to several companies including Citibank, PaineWebber, Fidelity Investments, GTE Investments, Philadelphia Suburban Corp., Aqua America, and Bank Julius Baer. Professor Pagano is a commentator on financial institutions and current market structure issues and has been frequently quoted in various media sources such as the *Wall Street Journal*, *New York Times*, *Financial Times*, *Associated Press*, *CNBC*, *Bloomberg TV*, *PBS's Nightly Business Report*, *Wall Street Journal Radio*, *Bloomberg Radio*, *CNN Radio*, and *National Public Radio*.