Evaluating Regulators:
The Efficacy of Discretionary Short Sale Rules

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Abstract

We examine the efficacy of short sale regulations in Hong Kong, where the list of shortable stocks is managed by regulators and is updated quarterly. While regulators generally cautiously restrict short selling to larger stocks, we form our predictions and examine two types of deviations: (1) misclassification, shortable stocks that should not be shortable; and (2) protection, non-shortable stocks that should be shortable. Misclassification is not associated with systematic mispricing, but protected stocks earn significantly higher future returns than other non-shortable stocks, implying a 0.56% annual welfare loss on the Hong Kong Exchange. We also establish that the likelihood of being protected is positively associated with Chinese institutional ownership. Overall, our findings suggest that increased transparency about regulatory interventions should be encouraged to promote price efficiency.

Keywords: Government policy and regulation, Market efficiency, Market transparency, Regulators' role, Short selling, Short sale regulations

JEL Classifications: G12; G15; G18; K29

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1. Introduction

Regulators play an important role in financial markets because they are expected to protect investors and maintain price efficiency by setting and enforcing different regulations. While many previous papers document the impacts of various rules on the market, few attempt to evaluate the regulators' job by studying the divergence between their actual and intended behavior. In this study, we examine the efficacy of exchange regulators in Hong Kong via short sale restrictions. Although Hong Kong is considered a relatively independent and developed market, it is part of China and may be linked or managed in consideration of the greater Chinese market.

Short sale restrictions were implemented in a large number of countries in 2008, following the collapse of the Lehman Brothers. In the U.S., the Securities and Exchange Commission (SEC) banned short selling of about 1,000 stocks (mostly financial firms) for about three weeks in September to October. On December 31, 2008, then-SEC Chairman Christopher Cox said, "Knowing what we know now, I believe on balance the commission would not do it [impose the ban] again. The costs appear to outweigh the benefits." Mr Cox's regrets are echoed by empirical findings that show the negative consequences of this temporary ban, such as reduced liquidity and increased volatility (see, e.g., Autore, Billingsley, and Kovacs, 2011; Choi, 2011; Beber and Pagano, 2013; Boulton and Braga-Alves, 2013; Boehmer, Jones, and Zhang, 2013).

Many short sale bans were imposed on an ad-hoc basis, providing little cross-sectional and time-series variations to tease out other effects coming from general market conditions; their implications may also not be applicable to normal times.[1] On the other hand, regulators in Hong Kong actively manage a designated list of "shortable" stocks: short selling a stock is allowed only

[1] Some studies show that financial regulatory activity changes with stock market conditions (e.g., Povel, Singh, and Winton, 2007; Zingales, 2009; Lohse and Thomann, 2015).

if the stock is on the list, and the list is updated periodically. This style of active, frequent intervention is relevant for some emerging markets, which are in the process of adopting securities lending and short selling with regulatory oversight. There is also a wide range of new regulatory interventions even in developed countries recently: for example, the newly implemented disclosure requirements and circuit breakers in Europe, Japan, and the U.S. Therefore, the effectiveness of the regulators in Hong Kong is of major economic interest, beyond a particular type of intervention in a specific exchange.

The analyses in this study lie in the framework of using financial data to measure the effect of regulation (Schwert, 1981). Specifically, we examine the short sale system in Hong Kong, where the Hong Kong Exchange and Clearing Limited (HKEx) manages a shortable list. Short selling is permitted only for specific stocks that are on the list. While there is empirical evidence showing price efficiency improvements for stocks that are added to this list (e.g., Chang, Cheng, and Yu, 2007; Chen and Rhee, 2010), our paper differs by investigating the selection of stocks as well as the timing of the selection. HKEx publishes a list of criteria on its website (see Appendix 1) and updates the list quarterly. There are usually both additions and deletions of stocks in each update. Regulators in Hong Kong state that they only allow short selling of liquid stocks, because "the prices of less liquid stocks are more vulnerable to manipulation."[2] However, an empirical question arises: does the selection process itself affect prices?

We use the first part of our sample period to form a prediction model of stock selection and its timing, based on firm characteristics such as market capitalization, book-to-market ratio, past

[2] Securities and Futures Commission (SFC)'s then-Chief Executive Officer, Martin Wheatley, September 2, 2008: http://www.sfc.hk/web/doc/EN/speeches/speeches/08/mw_20080902_hksi.pdf. SFC is responsible for regulating the securities and futures markets in Hong Kong, and HKEx manages the shortable list. In a consultative paper (HKEx, 1992) written before short selling was introduced in 1994, HKEx proposed that only liquid stocks with a sizable number of shares in public hands can be short sold.

returns, and liquidity measures. Then, out-of-sample, we use the model to forecast which stocks and on which trading dates should be on the list. We first find that market capitalization is the most important predictor of the shortable list. In fact, when we separate firms into quartiles according to market capitalization, the previously documented negative link between future stock returns and shortability is statistically insignificant in all these quartiles. While this might suggest that the shortable list itself is not as important as prior work shows, we show that deviations from the list, as defined by our model, are important.

More specifically, we examine the efficacy of the short sale rules by focusing on the pricing implication for two types of stocks, *misclassified* and *protected* stocks. Misclassified stocks are not expected to be shortable according to our model, but are on the actual list of shortable stocks on HKEx. These are stocks that likely enter the list too early and/or remain on the list for too long. Protected stocks are not on the actual list but are expected to be shortable. Our null hypothesis is that, if HKEx always picks the right set of stocks at the right time, there should not be any adverse systematic effects on the price efficiency of misclassified and protected stocks.

However, we find evidence that the protected stocks earn higher future returns in the short term, especially among small firms. We report an average of 1.67% higher monthly return on protected stocks (that is at an annualized rate of 20%). The total market capitalization of all protected firms is USD 37.5 Billion on avearge, implying a welfare loss (in terms of market inefficiency) of USD 7.5 Billion per year. For misclassified stocks, the evidence is mixed. Future returns are significantly lower than other shortable stocks in the quartile of largest market capitalization, but higher in the next quartile. In the presence of short sale constraints, stock prices may be biased upward if investors disagree. Our results therefore suggest that short sale constraints are more binding and prices are more inefficient for protected firms, probably an unintended

consequence of HKEx's selection process. We also find that the proportion of Chinese institutional ownership is a major determinant of the misclassification and protection status: a one percentage point increase in Chinese institutional ownership increases the odds of being protected by 9%. Further, we show that the 10 largest protected firms in 2010 have large exposure in Mainland China or Macau, suggesting that maybe some other unobservable stock characteristics are relevant for the selection or perhaps there is some political motivation. In particular, during our sample period of 2006 to 2010, short selling by the general public is not yet permitted on the Chinese exchanges.

Regulators claim that the short sale system in Hong Kong is "robust."[3] Hong Kong is one of the few markets that did not impose additional short sale bans and restrictions during the global financial crisis. Our paper presents some asset pricing implications of HKEx's choice of shortable stocks, as well as highlights the challenges faced by regulators. They need to carefully pick the list of stocks that the rules apply to (with both Type I and Type II errors in mind) and the updating frequency of the rules. An adequate frequency should avoid outdated regulations between updates, but at the same time should not over-interrupt the market. Alternatively, exchanges may consider a system where short sale or other restrictions are applied equally to all stocks, supplement with ad-hoc rules during crisis periods. We understand that there are no perfect interventions, but we document evidence that current rules incur costs, which is related to the benefit-cost analysis of financial regulation that the recent literature proposes (Cochrane, 2014; Posner and Weyl, 2014).

At a minimum, regulatory decisions should be made on "an objective, impartial and consistent basis, without conflict of interest, bias or improper influence" (OECD, 2012). The discrepancies

[3] Securities and Futures Commission (SFC)'s then-Chief Executive Officer, Martin Wheatley, September 26, 2008: http://www.hksfc.org/edistributionWeb/gateway/EN/news-and-announcements/news/doc?refNo=08PR154.

between our predicted list and the actual one suggest that HKEx's definition of "liquid" stocks is unclear. Under the current rule, HKEx can exercise some discretion. We think that liquidity should be defined based on objective and observable metrics, and that the whole process should be made more transparent. As argued by Kaufmann and Weber (2010) and Bradley (2011), regulatory transparency is not simply about publishing all the information; rather, it requires a clear definition of the values and goals of regulations. Hong Kong and other countries should adopt a short sale system that brings out its intended consequences: protecting investors, ensuring that markets are fair and efficient, and reducing systemic risk (International Organization of Securities Commissions, 1998).

The rest of the paper is organized as follows. Section 2 reviews the short selling literature, specifically on the role of short selling in relation with market efficiency. Section 3 describes the short sale system in Hong Kong, data collection process, and research hypotheses. Section 4 examines the misclassification and protectionism of stocks and the pricing implications. Section 5 concludes.

2. A Review: Asset Pricing Implications of Short Sales

2.1 Theory and Evidence

Restrictions or outright prohibition of short selling are considered to be a major impediment for efficient asset pricing around the world (Shleifer and Vishny, 1997; Bris, Goetzmann, and Zhu, 2007; Saffi and Sigurdsson, 2011). In the presence of short sale constraints, when investors have heterogeneous expectations or information, Miller (1977) shows that stock prices exhibit upward bias because the stocks are more likely to be traded among overoptimistic investors. In Harrison and Kreps' (1978) study, investors are willing to pay a premium to speculate on higher stock prices

because short sale constraints limit the downside. The result is that stocks become on average overvalued based on their expected payoffs in the future. Similarly, Hong and Stein (2003) argue that short sale constraints can lead to the formation of price bubbles, which can cause market crashes when market declines are exacerbated by the release of accumulated hidden information.

Numerous empirical studies find that high short selling activity predicts negative future returns (e.g., Desai et al., 2002; Cohen, Diether, and Malloy, 2007). Diamond and Verrecchia (1987) suggests that short sales are more informative because they are more costly and risky.[4] Boehmer, Jones, and Zhang (2008) show that large institutional short sales are informed as they predict future negative returns, while Boehmer and Wu (2013) show that short selling promote pricing efficiency because stocks with active shorting adjust faster to new information than less shorted counterparts.

2.2 Evidence from Asia

In the Asian context, short selling is often restricted to a subsample of stocks selected by regulators. Chang, Cheng, and Yu (2007) and Chang, Luo, and Ren (2014) analyze the effects of short sale constraints in Hong Kong and China, respectively. They find significantly negative abnormal returns when stocks are added to the designated list of securities for short selling, suggesting that these stocks were overvalued previously when short selling was forbidden. Chang, Luo, and Ren (2014) study the 2010 Chinese pilot scheme to lift the ban on short selling and find that it significantly reduces the cross-autocorrelation between stock returns and lagged market returns, as well as stock return volatility in both up and down markets.

[4] Also, retail investors often cannot access the securities lending market at reasonable costs, and short selling is effectively illegal globally without borrowing the shares before the short sale since the Global Financial Crisis.

Similarly, Jung, Kim, and Lee (2013) find that the participation of individual investors in short selling does not destabilize the stock market in Korea. They show that allowing short selling by individuals lowers bid-ask spreads, and reduces stock returns deviation from random walks. Chan, Kot, and Yang (2010) examine the effects of short sale constraints by investigating the difference between the A-H share premiums for shortable and for non-shortable H-shares during a down market.[5] They find that prices of shortable H-shares decline more than those of non-shortable H-shares in a down market, resulting in a larger A-H share premium; this supports the existing literature that short-sale constraints withhold negative information from stock prices. Finally, using flow-based information on stock borrowings in Japan, Takahashi (2010) shows that short sellers are not only informed about negative news, but also exploit price deviations from fundamental values.

While some short sales can be hedging based (e.g., Mitchell, Pulvino, and Stafford, 2004; Choi, Getmansky, and Tookes, 2009), the overall academic consensus is that short selling is beneficial as these trades provide new information to the market and should be encouraged at the regulatory level while monitored to some degree to discourage manipulation. There is ample evidence that shortable stocks are less overpriced and their share prices are more informative. However, little attention has been paid to the regulators' role in selecting the shortable stocks.

3. Data and Research Hypotheses

3.1. Hong Kong Exchange and Clearing Limited (HKEx) and Short Selling in Hong Kong

[5] A shares refer to Chinese shares traded only in China, while H shares are cross-listed shares traded only in Hong Kong.

Hong Kong introduced a pilot program on short selling in 1994. Short selling has since been gradually implemented, first by allowing shorting only for a handful of stocks and then by increasing the number of shortable stocks. The number of shortable stocks reaches about 45% of the stocks listed on HKEx, both in our sample period and today. It is interesting to note that HKEx was one of the few exchanges in the world that did not introduce additional restrictions such as a short sale ban in the recent financial crisis. Regulators claimed that the Hong Kong short sale system is resilient to market turmoil.

However, there is limited insight about the role of exchange regulators and their behavior. Regulators' intentions can vary, given the large variation in exchange structures. While most exchanges in developed economies are demutualized and often listed on exchange, many others operate under government control or are linked with the government. In the latter case, it is unclear whose economic interest the exchange represents. Despite being a listed company, HKEx's largest shareholder is the Government of Hong Kong, which holds a stake of 5.88% since September 2007. The government is currently the only shareholder that holds more than 5% of HKEx's shares, and any party that wants to hold more than 5% is required to seek the government's approval. In addition, the government appoints six of HKEx's 13 directors, including the Chairman. HKEx also cooperates with financial regulators in China. For example, in November 2014 HKEx launched a scheme, Shanghai-Hong Kong Stock Connect, that links the stock markets in Shanghai and Hong Kong, allowing investors to trade shares on the other market using their local brokers.

HKEx maintains an actively managed list of stocks that are shortable. HKEx argues that less liquid stocks are vulnerable to manipulation, and only allows short selling of liquid stocks. A brief overview of the system and the selection criteria are provided in Appendix 1. The list is updated

quarterly, with both additions and deletions of stocks. In our sample period, the updates usually occur in February, May, August, and November, but the exact dates vary. Between the quarterly changes, newly listed stocks may also be added to the list, usually within 60 trading days since IPO. While regulators claim that the short sale system in Hong Kong is robust, a former director of HKEx criticizes the rules as "archaic."[6]

3.2. Data

We collect data on all stocks listed on HKEx from July 3, 2006 to August 13, 2010. The sample period is restricted by the data availability on securities lending from Markit Securities (formerly Data Explorers). We require valid data on daily returns, trading volume, share prices, total number of shares, book equity, and daily bid-ask prices from DataStream and/or Factset. We also use institutional ownership data from Factset, where missing values are extrapolated from previous and future month values if available. If institutional ownership data is missing for an entire calendar year we input zero shares for institutional ownership holding. During our sample period the market has an average market capitalization of USD1.5 Billion and high market volatility both before the US financial crisis and after. In general, the earlier years in the sample (2007 – 2008) and the later years (2009 – 2010) are comparable in terms of returns, trading volume, and volatility (see Figure A.2.).

Our key dependent variables are the future 5-day raw cumulative returns ($Ret_{1,5}$) and the future 20-day raw cumulative returns ($Ret_{1,20}$). Our control variables include lagged 1-month size

[6] David Webb wrote on March 7, 2010, "Under archaic [HKEx] Rules, not all stocks can be sold short." (http://webb-site.com/articles/soldshort.asp). David Webb was an independent non-executive director of HKEx from 2003 to 2008. In March 2008, Webb resigned despite having one year left in his term as a director, citing that "the [HKEx] board giving up control to the government because of back door politics" as a reason (*The Standard*, "Webb gets out of exchanges hair," May 19, 2008).

(*LogMcap*$_{-1m}$), lagged 1-month book-to-market ratio (*BM*$_{-1m}$), lagged 1-month returns (*Ret*$_{-1m}$), lagged 1-month average and 5-day average turnover (*Turn*$_{-1m}$ and *Turn*$_{-5,-1}$), standard deviation of the previous month's daily returns (*RetStd*$_{-1m}$), average high and low price spread in the previous month (*HLspread*$_{-1m}$), average bid-ask spread in the previous month (*BAspread*$_{-1m}$), institutional ownership as a percentage of total number of shares outstanding (*IOperc*), and average nominal stock price over the previous 5 days (*Price*$_{-5,-1}$). We exclude all stock-day observations where information on stock returns or any control variable is missing. Overall, our final sample includes about 750 stocks per day, with 802,025 stock-day observations from July 2006 to August 2010.

Our main shorting measure is the *Shortable* dummy, which takes on the value of one for stocks that are allowed to be shorted on the HKEx. To obtain information on shortability, we download all online shortable securities lists and announced changes from HKEx from 2006 to 2011. We also complement the internet information with printed information and double check our online source against the annual Factbooks of the HKEx (HKEx, 2006, 2007, 2008, 2009, 2010).

A detailed list of all key variables with definitions is provided in Table 1, together with the summary statistics. While we do not have actual short sale trade data, we use the number of shares borrowed in securities lending contracts as a proxy for short selling, since naked shorting is prohibited on HKEx. For each shortable stock, we calculate the number of shares shorted relative to total shares outstanding (short interest ratio, *SIR*) and the number of shares shorted relative to the average daily trading volume (short interest volume, *SIV*).

As described in detail in Section 4.1, we classify all daily stock observations in 2009 to 2010 into four groups: (1) correctly shortable (stock characteristics suggest that the stock should be shortable, and it is indeed shortable), (2) misclassified (stock characteristics would not suggest that the stock is shortable, but it is shortable on HKEx), (3) correctly non-shortable (stock

characteristics suggest that the stock should not be shortable, and it is not shortable), and (4) protected (stock characteristics suggest that the stock should be shortable but it is not shortable on HKEx).

In Panel A of Table 1, we provide pooled sample statistics. In Panel B of Table 1, we differentiate across shortable and nonshortable stocks; shortable stocks include both correctly classified and misclassified stocks, and the nonshortable stocks include both correctly non-shortable and protected stocks. We present the summary statistics of the key return measures and control measures by year for all stocks, and then also for the subsamples of the shortable and nonshortable stocks.

[Table 1 about here]

About 45% of all HKEx listed stocks are shortable during our sample period. Figure 1 shows that time-series of the total number of stocks (on average about 750) in our sample and the number of shortable stocks (on average about 350). In Figure 2, we depict the time series of average shorting activity, with the average short interest volume (*SIV*) measure (on the left axis) and the average short interest ratio (*SIR*) measure (on the right axis). On average, *SIR* is about 0.5% while *SIV* is about 3; the latter suggests that on a typical day the number of shorted shares outstanding is 3 times the average daily trading volume.

[Figures 1 and 2 about here]

However, some stocks have zero shorting activity because those stocks are not permitted to be shorted, not because investors do not want to short. In Figure 3, we replicate Figure 2, with the

subsample of shortable stocks only. The average *SIR* is about 0.8% while the average *SIV* is about 4.[7]

[Figure 3 about here]

3.3. Research Hypotheses

Our primary research objective is to study Hong Kong regulators' selection method and its pricing implication. Specifically, we study the pricing impacts on two sets of stocks. We form these two sets of stocks by forming a prediction model of shortability based on firm characteristics. The first set, the misclassified stocks, are stocks that are shortable on HKEx but not expected to be shortable according to our model. The second set, the protected stocks, are stocks that are not shortable on HKEx but are expected to be shortable according to our model. So, we test the following two null hypotheses:

H_0(misclassified): *Misclassified stocks do not over/underperform other stocks.*

H_0(protected): *Protected stocks do not over/underperform other stocks.*

Our tests are therefore different from other studies that look at the effect of short sale constraints on prices. Chang, Cheng, and Yu (2007) and Chen and Rhee (2010) show that prices of shortable stocks are more efficient than those of non-shortable stocks in Hong Kong. We study whether the deviations from HKEx's list have any pricing implications, on top of the effects of the actual shortable list.

In addition, we examine the determinants for misclassification and protection. For example, India and South Korea implemented shorting ban on key industrial stocks such as aviation stocks,

[7] To reduce the skewness of these measures due to a small group of stocks with extreme shorting, we calculate the averages with value-weighting.

while the U.S. and European regulators protected financial stocks in the recent crisis. It is possible that Hong Kong regulators systematically prefer to protect investors' welfare and deter short sale manipulation by prohibiting short selling of some stocks. While such intentions can be good, it would be essential for the market to better understand the selection process and its implications.

4. Empirical Analyses

4.1. Predicting Shortability

HKEx claims that it selects liquid stocks, which are resilient against manipulation. While HKEx has its own selection criteria, our paper does not attempt to examine whether HKEx systematically sticks to the rules. Rather, we use a list of publicly available stock characteristics to speculate about the definition of "liquid stocks."[8] The advantage is that these characteristics are updated on a frequent basis, which helps us examine the timing of the stock selection as well.

Based on all available stock characteristics, we develop about 100 different prediction models of shortability using the 2006 to 2008 data. In Table 2, we report four different specifications with the highest level of accuracy of predicting shortability. We adopt Model 1 as our baseline model, in which 86.86% of the time the prediction is consistent with the regulators' decision for shortability. The most important determinant is the market capitalization of the stocks. The reported odds ratio for the market cap variable implies that, as *LogMcap* increase by 1 unit, the odds (p/(1-p)) that the stock is shortable increase by 538% (= (6.38 – 1) x 100%). As large stocks are typically more liquid, this finding is broadly consistent with HKEx's stated objective. In

[8] If our model is doing a poor job of explaining and predicting shortabililty, then our choice of misclassified and protected stocks would just be made randomly. Misclassified (protected) stocks would not systematically differ from other stocks, and we would fail to reject the null hypotheses, H_0(misclassified) and H_0(protected), in Section 3.3. In contrast, if HKEx's definition of "liquid stocks" is substantially different from the market's perception (which we attempt to capture with our prediction model), deviations from the shortability list can have pricing implications.

robustness analysis, we use only size to predict shortable stocks and still achieve about 70% accuracy.

[Table 2 about here]

We also find that the likelihood of shortability is greater for value stocks and stocks with higher institutional ownership. In addition, our results show that shortable stocks have lower turnover and higher bid-ask spreads, which may suggest that these stocks are less liquid. However, turnover and bid-ask spreads are highly correlated with firm size. The results only suggest that turnover is lower and bid-spreads are higher, after controlling for firm size. Also, the regression compares shortable and nonshortable stocks ex post. It is possible that shortable stocks are more liquid at the time of being added to the list. Gao, Hao, and Ma (2014) suggest that liquidity significantly declines after stocks added to the shortability list on the HKEx.

We use Model 1 to form our out-of-sample predictions for 2009 to 2010. Specifically, for each stock on each trading day for 2009 to 2010, we use the independent variables and the estimated coefficients to calculate our measure of the shortable probability. If this estimated probability is greater than 0.5, we predict that the stock is shortable, otherwise it is non-shortable. Comparing with HKEx's actual list in 2009 to 2010, Model 1 achieves an out-of-sample accuracy of 86.49%. If stock A on day X is predicted to be non-shortable but it is on the HKEx's list, we consider it misclassified. If stock B on day Y is predicted to be shortable but it is not on the HKEx's list, we consider it protected.

Note that we run the in-sample and out-of-sample analyses on a stock-day basis. We understand that HKEx only changes its list quarterly – if a stock is on the list, it must remain on the list until the next quarterly change. However, our goal is not to achieve 100% accuracy; we

would like to study how the timing of the selection process affects prices. Misclassified stocks are those that enter the list too soon or remain on the list too long, while protected stocks are those that never enter the list, enter the list too late, or leave the list too early.[9] If the timing of HKEx's update is always adequate or if it does not affect prices, then there should be no systematic pricing implications for these two types of stocks we identify, even between the quarterly changes of the list. In such cases, we would not be able to reject the null hypotheses in Section 3.3.

4.2 Cross-sectional Returns: Implications of Shortability

We first examine the role of shortability in explaining cross-sectional returns. In general, we expect lower future returns on shortable stocks relative to nonshortable stocks, because pessimistic investors can only express their opinion in the former (Miller, 1977).

In Table 3, we present Fama-MacBeth (1973) return regression results from 2006 to 2010. Future 5-day ($Ret_{1,5}$) and future 20-day ($Ret_{1,20}$) holding period returns are regressed on measures of shortability and control variables.[10] As in Fama and Macbeth (1973), at each time period we run a cross-sectional regression. The reported coefficients in Table 3 are time-series averages of the regression coefficients. The corresponding *t*-statistics are calculated based on Newey-West standard errors allowing for time series correlation using 6 lags for the 5-day return regressions and 21 lags for the 20-day return regressions. We present results for the full sample 2006 – 2010

[9] Note that even when HKEx removes a stock from the shortable list, short sellers do not have to close their positions immediately (Hwang, Liu, and Xu, 2015). HKEx only prohibits future short sale of that stock. The pricing impact we document is therefore not mechanically driven by short covering.

[10] Two important control variables are $Winner_{-1m}$ and $Loser_{-1m}$. They are dummy variables that indicate stocks in the top and bottom deciles of the return distribution in the previous month. It is possible that shortability is triggered by past returns (because large firms are more likely to be on the list), and that stocks' past and future returns are correlated. Controlling for past return measures ensures that our analysis focuses on the incremental explanatory power of shortability.

and also for the later part of the sample, 2009 – 2010, to show that the Hong Kong shorting market has not changed significantly during our sample period. The relative stability in the market is essential, because we use the first part of the sample for calibrating the selection model in Section 4.1 and the 2009-2010 data for testing the pricing impact of deviation from the model in Section 4.3.

[Table 3 about here]

These results are similar to other studies that examine the short selling market in Hong Kong (Chang, Cheng, and Yu, 2007; Chen and Rhee, 2010). Shortability is associated with lower future returns from 2006 to 2010, and from 2009 to 2010 as well. The negative return associated with shortability is somewhat reduced with firm size, as shown by the positively significant coefficient of *Shortable * Logmcap*.

In Table 4, we further study how size affects the previously documented negative relationship between shortability and future returns. We run the Fama-MacBeth (1973) regressions of future 5-day returns and of future 20-day returns separately for each size quartile. In 7 out of 8 cases (except for future 20-day returns in Q = 4, the largest quartile), the coefficient of *Shortable* dummy becomes statistically insignificant or positively significant. The results suggest that, when we examine stocks within each size quartile, whether a stock is in the *actual* shortable list is not a major predictor of its future return. This is perhaps not too surprising, as Table 2 shows that size is the most important determinant of the shortable status. What we will examine in the next section is whether *deviations* from the list, the main focus of our paper, are predictors of future stock returns. The analysis distinguishes our paper from the previous literature that uses the actual shortable list.

[Table 4 about here]

4.3. Asset Pricing Implications of Regulatory Intervention

While numerous studies have shown that the relaxation of short sale constraints (i.e., allowing shortability) is associated with lower returns, to our knowledge there is limited insight about the economic impact of the regulators. Do market participants understand regulatory intervention and differentiate between the average shortable stocks and the misclassified stocks (i.e., mistakenly shortable stocks)? Similarly, can the market differentiate between the average non-shortable and the protected stocks? First, in Table 5, we examine the stock return implications when regulators deviate from the expectations. The key measure, *Shortable-diff*, takes on the value of 1 if the stock is shortable but misclassified based on our model predictions, and takes on the value of -1 if the stock is non-shortable but protected based on our model protections. For all other cases, the *Shortable-diff* measure is zero.

[Table 5 about here]

Like Table 4, the actual list is not a significant predictor of future returns when we run the regressions separately for each size quartile. However, deviations from the list, as captured by *Shortable-diff*, are generally associated with lower future returns. The sign of the coefficient of *Shortable-diff* is negative in all quartiles except Q = 3 (the second largest quartile), and it is statistically significant in the smallest and the largest quartiles. The results, reported in Table A.4. (in Appendix section), are similar if we include an additional control dummy variable, High *SIV*, which captures the top decile of short sale activity (measured by short interest volume, *SIV*) during

the previous day. Therefore, even after controlling for the actual list and short sale activity, misclassified (protected) stocks appear to have lower (higher) future returns.

To better assess the pricing implication of regulators' deviations, we conduct subsample analyses in Table 6. We divide the sample into non-shortable and shortable stocks for the 2009 – 2010 sample period. Specifically, we test whether protected (misclassified) stocks systematically over or underperform, relative to other non-shortable (shortable) stocks. Relevant summary statistics for the shortable and non-shortable subsamples are included in Table A.3. (in Appendix). In 2009 to 2010, about 12% of all shortable-stock-days are misclassified, and about 14% of all non-shortable-stock-days are protected.

[Table 6 about here]

Within the subsample of non-shortable stocks (left panel), we find that protection is associated with a higher future 5-day return (20-day return) of 47 basis points (1.67%) in Model 1A (1B). The effect is statistically significant at the 1% level. The total market capitalization of all protected firms is USD 37.5 Billion on average. Using 1.67% as monthly return, we calculate a welfare loss of USD 7.5 Billion per year because of market inefficiency. This is 0.56% of the time-series average total market capitalization of USD 1,346 Billion in the Hong Kong stock market. The positive link between protection and future returns seems stronger among small firms.

On the other hand, misclassification does not have any overall significant effect on future returns (right panel). It is, however, possible that misclassification can explain returns for a subset of stocks. Our next analysis runs separate regressions for each size quartile, similar to Tables 4 and 5. Table 7 reports the regression results. For smaller stocks, protection positively predicts future returns. From the coefficient estimates, the protection status is associated with a higher

future 5-day return (20-day return) of 2.5% (13.7%) in the smallest quartile, and a higher future 5-day return (20-day return) of 30 basis points (66 basis points) in the second smallest quartile. The results are statistically significant for the smallest group, but not for size quartile 2, perhaps because small stocks generally have very high volatility in the Hong Kong market. For misclassification, the evidence is mixed: it positively predicts returns in the largest quartile but negatively predicts returns in the next quartile. Table A.5. (in Appendix) shows that the conclusion remains the same if an additional control dummy variable, High *SIV*, is included to capture the top decile of short sale activity (measured by short interest volume, *SIV*) during the previous day.

[Table 7 about here]

In sum, protectionism corresponds to future short-term overvaluation, especially among small stocks, suggesting that short sellers are unable to act on negative information and the short-sale constraint is more binding.[11] We reject our null H_0(protected). The evidence about the pricing implication for misclassified stocks is weaker.

4.4. Protection and Misclassification: The Role of Chinese Institutional Holdings

We next explore whether certain firm characteristics, other than those that are related to liquidity (those that we explore in the previous sections), can explain the protection and misclassified status of a stock. In Table 8, we present logistic regression results within the subsample of non-shortable stocks for *protected* stocks in Panel A and within the subsample of shortable stocks for

[11] For example, there can be more optimistic investors buying protected stocks, generating upward price pressure. The exact underlying mechanism is interesting but is not the main focus of the paper. We leave it for future research.

misclassified stocks in Panel B.[12] Our explanatory variables are major stock characteristics that are in general available to investors. The new additional explanatory variable is Chinese institutional ownership (*ChinaIO*), which is the combined holdings by Chinese investment companies, banks, and pension funds. Overall, we find that Chinese institutional ownership has a significant effect on determining both protected and misclassified stocks.[13]

[Table 8 about here]

Panel A of Table 8 shows that firms with higher Chinese institutional ownership are more likely to be protected. In interpreting the marginal effect, we find that a one percentage increase in Chinese institutional ownership increases the odds of stocks being protected by about 9%. In Panel B of Table 8, we find that Chinese institutional ownership is inversely related with the misclassification status. We show that a one percentage increase in Chinese institutional ownership decreases the odds of being misclassified about 19%.

Lastly, we take a closer look at the protected firms. In Table 9, we present summary statistics for the top 10 protected firms in terms of market capitalization. We find that these firms are mostly large industrial Chinese firms, such as Swire Pacific Limited, Longfor Properties, and GCL Poly Energy Limited. Swire Pacific Limited is a large conglomerate that predominantly operates in China and in property, aviation, beverages, marine services and trading, and industrial sectors. Longfor Properties is a large-scale property developer headquartered in Beijing that has operations

[12] As a robustness test, we also run the same regressions with Heckman selection, where in the first stage we predicted whether the stock is shortable or not then in the second step we added in additional stock characteristics, including Chinese institutional ownership, to explain the protection and/or misclassified status of the stock. The results are similar and are not reported.

[13] In addition, we run the regressions separately for each year (2009 and 2010) and obtain consistent results. This consistency suggests that the analysis is not systematically different in 2009 and 2010.

in over 10 cities in China. GCL Poly Energy is a green energy supplier in China and was the largest supplier of poly-silicon in the country as of 2009.

[Table 9 about here]

During our sample period, short selling in China has just been introduced for a small number of stocks with limited investor basis (i.e., Chinese regulators not only limit the stocks that can be shorted but also the number of brokerages that can facilitate shorting, and also heavily restrict which individuals can short sell in terms of putting minimal capital requirements). While Chinese institutional ownership is unlikely to be part of the HKEx's definition of "liquid stocks" (after we control for other characteristics), it is possible that our findings reflect regulatory collaborations among Hong Kong and China: regulators do not allow short selling for large firms with major interest in China. Overall, our findings suggest that in addition to the officially declared selection criteria, there may be some other unobservable, such as political motivation, that influences regulators' decision. For example, for stocks that are also listed on the Mainland Chinese exchanges, shorting on HKEx may be strategically prohibited to evade persistent mispricing of the same securities across the markets.[14]

5. Conclusion

Short sellers facilitate efficient pricing on developed stock exchanges. However, little attention is paid to regulators, who are often in the position to decide whether a stock is shortable or not. Hong Kong Exchanges and Clearing Limited (HKEx) gained significant recognition over the years by

[14] Using ADRs in the U.S., Blau, Van Ness, and Warr (2012) show that short sellers target ADRs from home countries where short selling is prohibited, because these ADRs are more likely to be overpriced. The setting is similar in Hong Kong and China: For a stock that is cross-listed in both markets, shorting could be allowed in Hong Kong (like in the U.S.) while prohibited for the same stock in China.

managing short-selling via the list of shortable stocks. While a number of studies has examined that adding a stock to the shortability list reduces overvaluation and aids price recovery, recently Gao, Hao, and Ma (2014) find that liquidity is adversely affected for newly shortable stocks. More importantly, there is limited insight about the selection process and the potential pricing implications from the selection process.

In this study, we examine the discretionally short sale program on HKEx from 2006 to 2010. Specifically, we establish a baseline selection model for shortability and identify stocks based on Type I and Type II errors as misclassified (i.e., shortable stocks but should not be shortable) or protected stocks (i.e., not shortable stocks but should be shortable). We show that there are important asset pricing implications for deviating from the prediction model: protected stocks, especially if they are small, are associated with significantly higher future returns. To understand the misclassification and protection, we find that institutional ownership by Chinese banks, companies, and funds and/or the firm's market exposure play a role. Chinese institutional ownership may capture some unobserved factors that are economically relevant to HKEx's definition of "liquid stocks," or regulators have some preferences for protecting these companies from short sellers.

Overall, to our knowledge we present the first study on understanding regulatory decision in assigning shortability. We find a significant economic impact: a welfare loss of USD 7.5 Billion per year. One of the reasons for our findings could be that the exchange is not proactive enough and does not update the list adequately in response to market changes or changes in stock characteristics. Another reason is that regulators may need to respond to certain political and nationalistic sentiment and protect certain stocks, as we have seen in the U.S. with the protection of the financial stocks during the recent financial crisis. There is also evidence that lobbying

expenditures by the U.S. financial industry and network connections affect the legislative outcomes of financial regulations (Igan and Mishra, 2014). Overall, our findings call for improved transparency about regulatory decisions, which could aid investors in better understanding price behavior.

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Table 1

Summary statistics

This table summarizes the statistics of the key variables in our dataset. $Ret_{1,5}$ and $Ret_{1,20}$ are, respectively, the cumulative return over the next 5 and 20 days. $Logmcap_{-1m}$ is the natural logarithm of the market capitalization in the previous month while BM_{-1m} is the book-to-market ratio in the previous month. $Turn_{-1m}$ is the average daily turnover during the previous month. $RetStd_{-1m}$ is the standard deviation of the daily returns during the previous month. Ret_{-1m} is the cumulative stock returns over the previous month. $HLspread_{-1m}$ is the average high and low price spread during the previous month. $BAspread_{-1m}$ is the average bid-ask spread during the previous month. *IOperc* is the institutional ownership of the stock for the day, as percentage of the total shares held by institutional investors from Factset. $Turn_{-5,-1}$ is the average daily turnover during the previous 5 days. $Price_{-5,-1}$ is the average price of the stock (converted to US Dollars) over the previous 5 days. $SIR_{-5,-1}$ is the average short interest ratio during the previous 5 days, while $SIV_{-5,-1}$ is the average shorted shares outstanding relative to daily trading volume during the previous five days. *Shortable* takes on the value of 1 (0) when the stock is allowed (not allowed) to be shorted on the exchange.

Panel A. Summary Statistics of full sample (both shortable and non-shortable stocks)

Variable	N	Mean	Median	Standard Deviation
$Ret_{1,5}$ (%)	802,025	0.62	0.00	10.47
$Ret_{1,20}$ (%)	802,025	2.67	0.00	22.64
$Logmcap_{-1m}$	802,025	5.32	5.07	1.82
BM_{-1m}	802,025	1.28	0.93	1.30
$Turn_{-1m}$ (%)	802,025	0.35	0.13	0.99
$RetStd_{-1m}$ (%)	802,025	3.80	3.06	3.48
Ret_{-1m} (%)	802,025	3.15	0.00	25.28
$HLspread_{-1m}$ (%)	801,827	4.50	3.99	2.78
$BAspread_{-1m}$ (%)	802,025	3.67	1.69	6.33
IOperc (%)	802,025	7.98	2.01	12.29
$Turn_{-5,-1}$ (%)	802,025	0.26	0.10	0.53
$Price_{-5,-1}$	802,025	0.70	0.16	1.87
$SIR_{-5,-1}$ (%)	802,025	0.25	0.00	0.80
$SIV_{-5,-1}$	802,025	1.39	0.00	5.22
Shortable	802,025	0.42	0.00	0.49

Table 1 continued

Panel B. Time series of key variables

Individual stocks data are aggregated yearly in the period July 3, 2006 to August 13, 2010. This table contains daily average of key short sale variables across all traded stocks during the period. *#Stocks* is the average number of traded stocks in each group during the specific year. $Ret_{1,5}$, $Ret_{1,20}$, $Logmcap_{-1m}$, BM_{-1m}, $BAspread_{-1m}$, $RetStd_{-1m}$, $IOperc$, $Turn_{-1m}$, and $SIR_{-5,-1}$ are defined in Panel A.

Year	#Stocks	$Ret_{1,5}$ (%)	$Ret_{1,20}$ (%)	$Logmcap_{-1m}$	BM_{-1m}	$BAspread_{-1m}$ (%)	$RetStd_{-1m}$ (%)	IOperc (%)	$Turn_{-1m}$ (%)	$SIR_{-5,-1}$ (%)
All Stocks										
2006	675	0.72	3.29	5.76	1.03	2.65	2.63	9.64	0.25	0.32
2007	752	1.04	3.68	6.06	0.82	2.00	3.62	9.68	0.53	0.36
2008	775	-1.38	-5.13	5.92	1.16	3.56	3.84	9.97	0.21	0.45
2009	795	1.72	7.70	5.76	1.51	3.06	3.90	9.10	0.37	0.29
2010	867	0.26	0.91	6.16	1.09	1.70	2.82	8.71	0.34	0.38
Shortable stocks										
2006	235	0.72	3.23	7.24	0.73	0.85	1.98	14.74	0.24	0.67
2007	324	0.62	1.81	7.26	0.67	0.86	2.79	14.12	0.40	0.66
2008	385	-1.49	-5.39	6.94	0.99	1.44	3.47	13.12	0.23	0.72
2009	282	1.54	7.01	7.23	1.17	0.91	3.33	13.84	0.40	0.61
2010	372	0.10	0.50	7.33	0.92	0.75	2.49	12.39	0.32	0.70
Non Shortable stocks										
2006	440	0.72	3.35	4.40	1.31	4.33	3.24	4.91	0.26	-
2007	428	1.56	5.98	4.59	1.01	3.39	4.63	4.22	0.68	-
2008	389	-1.22	-4.72	4.30	1.43	6.97	4.42	4.92	0.17	-
2009	513	1.88	8.32	4.42	1.82	5.03	4.42	4.77	0.35	-
2010	495	0.45	1.39	4.78	1.29	2.81	3.22	4.41	0.36	-

Table 2

Logistic Regression to Predict Securities Eligible for Short-Selling

The dependent variable is the *Shortable* dummy, which equals one for stocks that are permitted to be shorted by regulators. The explanatory variables are lagged firm specific controls such as *Logmcap*$_{-1m}$, *BM*$_{-1m}$, *Ret*$_{-1m}$, *Turn*$_{-1m}$ and *IOperc* as defined in Table 1. *Price*$_{-5,-1}$ is the average price in USD during the last 5 trading days. *HLspread*$_{-1m}$ is the average high and low price spread during the previous month. *BAspread*$_{-1m}$ is the average bid-ask spread during the previous month. *IOperc* is the institutional ownership of the stock for the day. *Turn*$_{-5,-1}$ is the average daily turnover during the previous 5 days *DHighRetvol* is a dummy variable that takes on the value of one for stocks with lagged one month daily stock return volatility (*RetStd*$_{-1m}$) from the top decile. *In-sample prediction accuracy* is percentage of stock-day observations where the model predictions correctly reflect whether the stock is shortable, based on the sample period of July 2006 to December 2008. *Out-sample prediction accuracy* is the percentage of stock-day observations where the model predictions correctly reflect whether the stock is shortable, based on the January 2009 – August 2010 sample period. Based on the sample from July 2006 to December 2008, from logistic regressions the odd estimates are reported with the corresponding *p*-values brackets.

	Model 1	**Model 2**	**Model 3**	**Model 4**
Intercept	-10.403	-10.366	-10.234	-11.415
	[<.0001]	[<.0001]	[<.0001]	[<.0001]
Logmcap$_{-1m}$	6.384	6.779	6.530	7.445
	[<.0001]	[<.0001]	[<.0001]	[<.0001]
BM$_{-1m}$	1.410	1.396	1.392	1.342
	[<.0001]	[<.0001]	[<.0001]	[<.0001]
Ret$_{-1m}$	0.978	0.978	0.977	0.981
	[<.0001]	[<.0001]	[<.0001]	[<.0001]
Turn$_{-1m}$	0.889	0.905		0.916
	[<.0001]	[<.0001]		[<.0001]
Price$_{-5,-1}$	0.884	0.879		
	[<.0001]	[<.0001]		
HLspread$_{-1m}$				1.067
				[<.0001]
BAspread$_{-1m}$	0.868	0.869	0.871	
	[<.0001]	[<.0001]	[<.0001]	
IOperc	1.039			
	[<.0001]			
Turn$_{-5,-1}$		0.972	0.924	
		[0.0081]	[<.0001]	
DHighRetvol		0.964	1.243	0.723
		[0.0015]	[<.0001]	[<.0001]
In-sample prediction accuracy	86.86%	86.69%	86.70%	86.05%
Out-sample prediction accuracy	86.49%	86.08%	86.09%	85.88%
Likelihood ratio	380,959	371,544	370,835	366,746
SCORE	262,994	254,655	250,322	251,078
WALD	111,093	112,516	111,372	114,160
Observations	488,486	488,486	488,486	488,382

Table 3

Cross Sectional Returns and the Role of Shortability from 2006 to 2010

The dependent variable is the future 5-day ($Ret_{1,5}$) or 20-day ($Ret_{1,20}$) cumulative holding period return for stock *i* from day *t*. The explanatory variables $Logmcap_{-1m}$, BM_{-1m}, $RetStd_{-1m}$, and $BAspread_{-1m}$ as defined in Table 1. $Winner_{-1m}$ ($Loser_{-1m}$) dummy takes on the value of one for stocks with past one month cumulative raw returns from the top (bottom) decile of the distribution. The *Shortable* dummy takes on the value of one when shorting is permitted by regulators for the specific stock. *Shortable*Logmcap* is an interaction variable between *Shortable* and firm size. $HighSIR_{-1}$ ($HighSIV_{-1}$) dummy takes on the value of one for stocks with *SIR* (*SIV*) from the top decile of the distribution during the previous day, where *SIR* is the number of shares shorted relative to the total shares outstanding and *SIV* is the number of shares shorted relative to the average daily trading volume. The coefficient estimates from Fama-Macbeth regression are reported with the corresponding Newey-West adjusted *t*-stats with lag=6 for the 5-day return regressions and with lag=21 for the 20-day return regressions. We denote the statistical significance at 1 %, 5%, and 10% levels with ***, **, and *, respectively.

	Cumulative 5-day future returns						**Cumulative 20-day future returns**					
	2006-2010			**2009-2010**			**2006-2010**			**2009-2010**		
	1A	**2A**	**3A**	**1A**	**2A**	**3A**	**1B**	**2B**	**3B**	**1B**	**2B**	**3B**
Intercept	2.332***	2.334***	2.332***	2.896***	2.898***	2.894***	9.401***	9.410***	9.401***	11.812***	11.825***	11.813***
	(5.94)	(5.94)	(5.94)	(5.61)	(5.61)	(5.60)	(4.90)	(4.90)	(4.90)	(4.67)	(4.67)	(4.67)
$Logmcap_{-1m}$	-0.451***	-0.451***	-0.450***	-0.379***	-0.379***	-0.378***	-1.728***	-1.730***	-1.728***	-1.430***	-1.432***	-1.428***
	(-7.78)	(-7.78)	(-7.77)	(-5.05)	(-5.05)	(-5.04)	(-6.46)	(-6.46)	(-6.45)	(-4.11)	(-4.11)	(-4.11)
BM_{-1m}	0.080**	0.079**	0.080**	0.051	0.051	0.052	0.254*	0.253*	0.255*	0.163	0.162	0.165
	(2.10)	(2.10)	(2.12)	(1.12)	(1.12)	(1.14)	(1.78)	(1.78)	(1.79)	(0.93)	(0.93)	(0.94)
$RetStd_{-1m}$	0.025	0.025	0.024	0.011	0.011	0.011	0.147	0.147	0.145	0.02	0.02	0.017
	(1.12)	(1.13)	(1.10)	(0.31)	(0.31)	(0.29)	(1.62)	(1.63)	(1.61)	(0.15)	(0.15)	(0.13)
$BAspread_{-1m}$	0.023*	0.023*	0.023*	-0.007	-0.007	-0.007	0.02	0.02	0.02	-0.043	-0.043	-0.043
	(1.91)	(1.90)	(1.91)	(-0.40)	(-0.40)	(-0.40)	(0.61)	(0.61)	(0.61)	(-0.71)	(-0.71)	(-0.71)
$Winner_{-1m}$	0.115*	0.113*	0.111*	-0.004	-0.002	-0.008	0.623**	0.621**	0.607**	0.300	0.303	0.271
	(1.70)	-1.68	-1.65	(-0.04)	(-0.02)	(-0.08)	(2.43)	(2.42)	(2.38)	(1.11)	(1.12)	(1.00)
$Loser_{-1m}$	0.098	0.095	0.103	0.165*	0.161*	0.170*	0.193	0.19	0.213	0.578*	0.566*	0.592*
	(1.35)	(1.32)	(1.42)	(1.71)	(1.68)	(1.75)	(0.73)	(0.73)	(0.81)	(1.72)	(1.71)	(1.75)
Shortable	-2.393***	-2.414***	-2.474***	-1.075***	-1.085***	-1.163***	-8.700***	-8.784***	-8.971***	-3.292***	-3.294**	-3.624***
	(-7.33)	(-7.22)	(-7.58)	(-2.70)	(-2.60)	(-2.99)	(-5.92)	(-5.82)	(-6.03)	(-2.63)	(-2.43)	(-2.91)
Shortable*Logmcap	0.471***	0.475***	0.491***	0.246***	0.249***	0.267***	1.718***	1.734***	1.784***	0.817***	0.817***	0.898***
	(8.22)	(8.13)	(8.48)	(3.81)	(3.65)	(4.16)	(6.71)	(6.60)	(6.82)	(3.81)	(3.56)	(3.95)
$HighSIR_{-1}$		-0.046			-0.017			-0.158			-0.009	
		(-0.65)			(-0.17)			(-0.71)			(-0.03)	
$HighSIV_{-1}$			-0.211***			-0.203**			-0.675***			-0.776**
			(-3.25)			(-2.39)			(-3.18)			(-2.35)
R-Squared	0.048	0.050	0.049	0.041	0.042	0.042	0.057	0.058	0.058	0.044	0.045	0.045
Adj. R-Squared	0.038	0.038	0.038	0.032	0.032	0.032	0.047	0.047	0.047	0.035	0.034	0.034
Observations	802,025	802,025	802,025	333,086	333,086	333,086	802,025	802,025	802,025	333,086	333,086	333,086

Table 4

Cross Sectional Returns and the Role of Shortability (by Size Quartiles)

The dependent variable is the future 5-day ($Ret_{1,5}$) or 20-day ($Ret_{1,20}$) cumulative holding period return in percentage for stock *i* from day *t* in each within size quartile regression. The explanatory variables $Logmcap_{-1m}$, BM_{-1m}, $RetStd_{-1m}$, and $BAspread_{-1m}$ as defined in Table 1. $Winner_{-1m}$ ($Loser_{-1m}$) dummy takes on the value of one for stocks with past one month cumulative raw returns from the top (bottom) decile of the distribution. The *Shortable* dummy takes on the value of one when shorting is permitted by regulators for the specific stock. The coefficient estimates from Fama-Macbeth regression are reported with the corresponding Newey-West adjusted *t*-stats with lag=6 for the 5-day return regressions and with lag=21 for the 20-day return regressions based on the sample period of Jan. 1. 2009 to Aug 13, 2010. We denote the statistical significance at 1 %, 5%, and 10% levels with ***, **, and *, respectively.

	Cumulative 5-day future returns				**Cumulative 20-day future returns**			
	Small (Q=1)	**Medium (Q=2)**	**Medium (Q=3)**	**Large (Q=4)**	**Small (Q=1)**	**Medium (Q=2)**	**Medium (Q=3)**	**Large (Q=4)**
Intercept	4.048***	1.234	1.409	1.264*	13.153***	6.331	6.048**	6.215**
	(5.03)	(1.14)	(1.59)	(1.73)	(3.65)	(1.39)	(2.17)	(2.15)
$Logmcap_{-1m}$	-0.671***	-0.077	-0.046	-0.141**	-1.569**	-0.371	-0.221	-0.566*
	(-3.64)	(-0.39)	(-0.33)	(-2.10)	(-2.20)	(-0.45)	(-0.45)	(-1.93)
BM_{-1m}	0.003	0.048	0.006	0.143	-0.07	0.06	0.095	0.46
	(0.06)	(0.98)	(0.10)	(1.11)	(-0.34)	(0.38)	(0.40)	(0.74)
$RetStd_{-1m}$	0.008	0.045	-0.043	0.026	-0.073	0.081	-0.081	0.163
	(0.16)	(0.95)	(-0.87)	(0.40)	(-0.47)	(0.40)	(-0.41)	(0.72)
$BAspread_{-1m}$	-0.021	0.029	-0.061	-0.141	-0.082	0.135	-0.226	-0.689**
	(-1.00)	(0.76)	(-1.04)	(-1.32)	(-1.24)	(1.11)	(-1.29)	(-2.51)
$Winner_{-1m}$	-0.060	0.015	0.069	-0.001	0.182	0.057	0.372	0.199
	(-0.32)	(0.08)	(0.51)	(-0.01)	(0.25)	(0.10)	(0.94)	(0.64)
$Loser_{-1m}$	0.343**	0.035	0.071	0.063	1.767***	-0.075	-0.049	-0.068
	(2.23)	(0.24)	(0.46)	(0.44)	(3.05)	(-0.15)	(-0.09)	(-0.13)
Shortable	0.808	0.034	0.061	0.670**	1.572	1.309	0.528	1.835*
	(1.37)	(0.13)	(0.52)	(2.45)	(0.71)	(1.23)	(0.93)	(1.90)
R-Squared	0.056	0.062	0.072	0.118	0.053	0.057	0.075	0.15
Adj. R-Squared	0.024	0.029	0.039	0.087	0.021	0.024	0.043	0.119
Observations	83111	83333	83423	83219	83333	83423	83219	83111

Table 5

Cross Sectional Returns and the Role of Deviation from the Shortability Model (by Size Quartiles)

The dependent variable is the future 5-day ($Ret_{1,5}$) or 20-day ($Ret_{1,20}$) cumulative holding period return in percentage for stock *i* from day *t* in each within size quartile regression. The explanatory variables $Logmcap_{-1m}$, BM_{-1m}, $RetStd_{-1m}$, and $BAspread_{-1m}$ as defined in Table 1. $Winner_{-1m}$ ($Loser_{-1m}$) dummy takes on the value of one for stocks with past one month cumulative raw returns from the top (bottom) decile of the distribution. The *Shortable* dummy takes on the value of one when shorting is permitted by regulators for the specific stock. *Shortable-diff* takes on the value of 1 (-1) if the stock is shortable (not shortable) but should not be shortable (should be shortable) based on the model prediction; otherwise it is 0. The coefficient estimates from Fama-Macbeth regression are reported with the corresponding Newey-West adjusted *t*-stats with lag=6 for the 5-day return regressions and with lag=21 for the 20-day return regressions based on the sample period of Jan. 1. 2009 to Aug 13, 2010. We denote the statistical significance at 1 %, 5%, and 10% levels, with ***, **, and *, respectively.

	Cumulative 5-day future returns				**Cumulative 20-day future returns**			
	Small (Q=1)	**Medium (Q=2)**	**Medium (Q=3)**	**Large (Q=4)**	**Small (Q=1)**	**Medium (Q=2)**	**Medium (Q=3)**	**Large (Q=4)**
Intercept	4.414***	1.406	0.984	0.238	15.026***	6.968	4.376	2.371
	(5.14)	(1.29)	(1.06)	(0.28)	(3.76)	(1.52)	(1.38)	(0.69)
$Logmcap_{-1m}$	-0.739***	-0.119	0.078	-0.193***	-1.915**	-0.515	0.252	-0.770***
	(-3.83)	(-0.60)	(0.50)	(-2.97)	(-2.47)	(-0.62)	(0.42)	(-2.78)
BM_{-1m}	-0.047	0.048	0.028	0.181	-0.334	0.064	0.172	0.625
	(-0.78)	(0.96)	(0.45)	(1.41)	(-1.39)	(0.38)	(0.68)	(1.01)
$RetStd_{-1m}$	-0.002	0.046	-0.058	0.051	-0.121	0.082	-0.132	0.274
	(-0.05)	(0.97)	(-1.14)	(0.77)	(-0.79)	(0.41)	(-0.63)	(1.25)
$BAspread_{-1m}$	-0.021	0.029	-0.077	-0.104	-0.083	0.134	-0.290	-0.506*
	(-1.00)	(0.76)	(-1.26)	(-0.94)	(-1.24)	(1.10)	(-1.50)	(-1.79)
$Winner_{-1m}$	-0.039	0.015	0.040	-0.015	0.266	0.077	0.272	0.140
	(-0.20)	(0.09)	(0.28)	(-0.13)	(0.36)	(0.14)	(0.64)	(0.43)
$Loser_{-1m}$	0.314**	0.028	0.119	0.079	1.636***	-0.085	0.120	0.026
	(2.04)	(0.19)	(0.78)	(0.54)	(2.90)	(-0.16)	(0.24)	(0.05)
Shortable	1.907**	0.275	-0.306	1.975***	9.026*	1.639	-0.833	6.710***
	(2.44)	(0.73)	(-1.65)	(4.33)	(1.70)	(1.20)	(-1.09)	(4.60)
Shortable-diff	-2.476**	-0.199	0.392**	-1.531***	-13.794**	-0.212	1.422**	-5.981***
	(-2.58)	(-0.66)	(2.27)	(-3.91)	(-2.47)	(-0.26)	(2.30)	(-4.91)
R-Squared	0.061	0.066	0.079	0.130	0.061	0.062	0.082	0.164
Adj. R-Squared	0.025	0.028	0.041	0.095	0.025	0.023	0.045	0.130
Observations	83111	83333	83423	83219	83111	83333	83423	83219

Table 6

Cross Sectional Returns and the Role of Protection and Misclassification

The dependent variable is the future 5-day and 20-day cumulative holding period return for stock *i* from day *t* in Models A and B respectively. The explanatory variables are lagged firm specific controls such as *Logmcap*$_{-1m}$, *BM*$_{-1m}$, *RetStd*$_{-1m}$, *BAspread*$_{-1m}$, *Winner*$_{-1m}$ and *Loser*$_{-1m}$ as defined in Table 3. *SmallFirm* is a dummy variable that indicates the firm size is at the bottom quartile of size distribution within the subsample. *Protected* is a dummy variable that takes on the value of 1 which should be shortable according to the model but are not shortable by regulators. *Misclassified* is a dummy variable that takes on the value of 1 if the stock is shortable but should not be shortable according to the model. The coefficient estimates from Fama-Macbeth regression are reported with the corresponding Newey West adjusted *t*-stats with lag=6 for the 5-day return regression and with lag=21 for the 20-day return regression based on the sample period of Jan. 1. 2009 to Aug 13, 2010. We denote the 1%, 5%, and 10% statistical significance levels with ***, **, and *, respectively.

	All Non Shortable Stocks					**All Shortable Stocks**			
	5-day Cumulative Ret		**20-day Cumulative Ret**			**5-day Cumulative Ret**		**20-day Cumulative Ret**	
	(1A)	**(2A)**	**(1B)**	**(2B)**		**(1A)**	**(2A)**	**(1B)**	**(2B)**
Intercept	3.268***	3.535***	13.263***	14.311***	Intercept	1.866***	2.084***	8.126***	8.591***
	(5.75)	(5.62)	(4.68)	(4.33)		(3.36)	(3.63)	(3.27)	(3.22)
Logmcap$_{-1m}$	-0.476***	-0.514***	-1.783***	-1.890***	Logmcap$_{-1m}$	-0.138**	-0.166***	-0.074	-0.071
	(-5.39)	(-4.98)	(-4.25)	(-3.70)		(-2.54)	(-2.93)	(-0.30)	(-0.27)
BM$_{-1m}$	0.048	0.002	0.152	-0.120	BM$_{-1m}$	-0.011	-0.008	0.192	0.196
	(0.91)	(0.04)	(0.80)	(-0.83)		(-0.22)	(-0.14)	(0.94)	(0.95)
Retstd$_{-1m}$	0.007	-0.004	-0.021	-0.092	Retstd$_{-1m}$	0.037	0.040	-0.023	-0.026
	(0.17)	(-0.10)	(-0.16)	(-0.65)		(0.62)	(0.66)	(-0.14)	(-0.16)
BAspread$_{-1m}$	-0.009	-0.006	-0.052	-0.038	BAspread$_{-1m}$	0.002	-0.004	-0.130	-0.094
	(-0.53)	(-0.33)	(-0.89)	(-0.59)		(0.03)	(-0.06)	(-0.41)	(-0.29)
Winner$_{-1m}$	0.055	0.043	0.565	0.555	Winner$_{-1m}$	-0.068	-0.069	0.241	0.282
	(0.41)	(0.32)	(1.30)	(1.27)		(-0.67)	(-0.68)	(0.46)	(0.54)
Loser$_{-1m}$	0.166	0.134	0.631*	0.470	Loser$_{-1m}$	0.104	0.112	-0.603**	-0.663**
	(1.62)	(1.32)	(1.79)	(1.38)		(0.74)	(0.79)	(-2.56)	(-2.56)
Protected	0.470***	0.457***	1.670***	1.497***	Missclassified	0.124	0.157	0.455	-0.329
	(3.28)	(3.10)	(3.07)	(2.81)		(0.81)	(0.49)	(0.71)	(-0.28)
SmallFirm		-0.124		-0.393	SmallFirm		-0.191		-0.526
		(-0.84)		(-0.75)			(-1.47)		(-0.90)
Protected * SmallFirm		3.654		22.822*	Missclassified * SmallFirm		0.093		1.201
		(1.44)		(1.81)			(0.27)		(0.77)
R-Squared	0.036	0.046	0.038	0.053	R-Squared	0.072	0.077	0.081	0.087
Adjusted R-Squared	0.023	0.030	0.024	0.037	Adjusted R-Squared	0.00	0.052	0.060	0.062
Observations	205071	205071	205071	205071	Observations	128015	128015	128015	128015

Table 7

Cross Sectional Returns and the Role of Protection and Misclassification (by Size Quartiles)

The dependent variable is the future 5-day ($Ret_{1,5}$) or 20-day ($Ret_{1,20}$) cumulative holding period return in percentage for stock *i* from day *t* in each within size quartile regression. The explanatory variables $Logmcap_{-1m}$, BM_{-1m}, $RetStd_{-1m}$, and $BAspread_{-1m}$ as defined in Table 1. $Winner_{-1m}$ ($Loser_{-1m}$) dummy takes on the value of one for stocks with past one month cumulative raw returns from the top (bottom) decile of the distribution. The *Shortable* dummy takes on the value of one when shorting is permitted by regulators for the specific stock. *Protected* is a dummy variable that takes on the value of 1 which should be shortable according to the model but are not shortable by regulators. *Misclassified* is a dummy variable that takes on the value of 1 if the stock is shortable but should not be shortable according to the model. The coefficient estimates from Fama-Macbeth regression are reported with the corresponding Newey-West adjusted *t*-stats with lag=6 for the 5-day return regressions and with lag=21 for the 20-day return regressions based on the sample period of Jan. 1. 2009 to Aug 13, 2010. We denote statistical significance at 1 %, 5%, and 10% levels with ***, **, and *, respectively.

	Cumulative 5-day future returns				Cumulative 20-day future returns			
	Small (Q=1)	**Medium (Q=2)**	**Medium (Q=3)**	**Large (Q=4)**	**Small (Q=1)**	**Medium (Q=2)**	**Medium (Q=3)**	**Large (Q=4)**
Intercept	4.412***	1.473	0.933	1.973***	15.077***	6.565	4.307	8.159***
	(5.17)	(1.42)	(1.09)	(2.77)	(3.84)	(1.48)	(1.58)	(2.60)
$Logmcap_{-1m}$	-0.737***	-0.132	0.032	-0.134*	-1.925**	-0.414	0.107	-0.541*
	(-3.84)	(-0.70)	(0.24)	(-1.91)	(-2.52)	(-0.52)	(0.22)	(-1.88)
BM_{-1m}	-0.048	0.047	0.020	0.123	-0.339	0.071	0.147	0.389
	(-0.82)	(0.95)	(0.32)	(0.96)	(-1.44)	(0.41)	(0.58)	(0.64)
$RetStd_{-1m}$	-0.002	0.045	-0.046	0.015	-0.120	0.081	-0.107	0.134
	(-0.04)	(0.95)	(-0.92)	(0.23)	(-0.78)	(0.40)	(-0.52)	(0.60)
$BAspread_{-1m}$	-0.021	0.030	-0.053	-0.234**	-0.084	0.127	-0.197	-1.032***
	(-1.00)	(0.77)	(-0.90)	(-2.11)	(-1.26)	(1.04)	(-1.06)	(-3.13)
$Winner_{-1m}$	-0.045	0.024	0.056	-0.016	0.265	0.031	0.359	0.129
	(-0.23)	(0.14)	(0.42)	(-0.13)	(0.36)	(0.06)	(0.91)	(0.39)
$Loser_{-1m}$	0.312**	0.026	0.115	0.041	1.636***	-0.093	0.136	-0.075
	(2.03)	(0.18)	(0.76)	(0.28)	(2.89)	(-0.19)	(0.26)	(-0.14)
Protected	2.551***	0.298	-0.067	-0.103	13.667**	0.659	-0.418	0.519
	(2.75)	(0.78)	(-0.49)	(-0.39)	(2.44)	(0.57)	(-0.84)	(0.65)
Misclassified	0.666	0.130	0.625*	-0.514	1.552	1.558	1.585	-2.954**
	(1.22)	(0.48)	(1.76)	(-0.97)	(0.77)	(1.38)	(1.56)	(-2.54)
R-Squared	0.060	0.065	0.080	0.123	0.060	0.060	0.083	0.152
Adj. R-Squared	0.025	0.027	0.043	0.089	0.025	0.022	0.046	0.120
Observations	83111	83333	83423	83219	83111	83333	83423	83219

Table 8

Explaining the impact of misclassification in protected and misclassified stocks

Logistic regressions in Panel A (Panel B) are conducted in the sub-sample of non-shortable (shortable) firms in 2009-2010 to explore reasons for misclassification of stocks such as having more Chinese institutional ownership. The dependent variable in Panel A (Panel B) is *Protected* (*Misclassified*), a dummy that takes on value of 1 when stocks should be shortable but are not shortable (are shortable but should not be shortable) according to the model. The explanatory variables are lagged firm specific controls such as *Ret*$_{-1m}$, *Logmcap*$_{-1m}$, *Retstd*$_{-1m}$ and *BAspread*$_{-1m}$ as defined in Table 1. *ChinaIO (continuous)* is the percentage of Chinese institutional ownership for stock *i*. *ChinaIO (dummy)* takes on the value of 1 when *ChinaIO (continuous)* is larger than 0. We denote statistical significance at 1 %, 5% or 10% levels, with ***, **, *, respectively.

Panel A. Predicting Protected Stocks within the Subsample of Non-Shortable Stocks

	2009-2010							
	Coeff	**Odds**	**Coeff**	**Odds**	**Coeff**	**Odds**	**Coeff**	**Odds**
	Model 1		**Model 2**		**Model 3**		**Model 4**	
Intercept	-23.188***		-21.616***		-22.428***		-20.844***	
	[<.0001]		[<.0001]		[<.0001]		[<.0001]	
ChinaIO (continuous)	0.089***	1.093	0.094***	1.099				
	[<.0001]		[<.0001]					
ChinaIO (dummy)					1.007***	2.738	1.027***	2.792
					[<.0001]		[<.0001]	
Ret$_{-1m}$	-0.056***	0.945	-0.054***	0.947	-0.056***	0.945	-0.054***	0.947
	[<.0001]		[<.0001]		[<.0001]		[<.0001]	
Logmcap$_{-1m}$	4.239***	69.335	4.148***	63.321	4.087***	59.57	3.989***	54.016
	[<.0001]		[<.0001]		[<.0001]		[<.0001]	
RetStd$_{-1m}$			-0.158***	0.854			-0.160***	0.852
			[<.0001]				[<.0001]	
BAspread$_{-1m}$			-0.305***	0.737			-0.286***	0.751
			[<.0001]				[<.0001]	
Likelihood ratio	111,239		113,523		110,419		112,602	
SCORE	80,659		83,111		81,664		84,006	
WALD	26,310		24,954		26,806		25,449	
Observations	205,071		205,071		205,071		205,071	

Table 8 continued

Panel B. Predicting Misclassified Stocks Within the Subsample of Shortable Stocks

	2009-2010							
	Coeff	**Odds**	**Coeff**	**Odds**	**Coeff**	**Odds**	**Coeff**	**Odds**
	Model 1		**Model 2**		**Model 3**		**Model 4**	
Intercept	25.541***		25.304***		24.797***		24.398***	
	[<.0001]		[<.0001]		[<.0001]		[<.0001]	
ChinaIO (continuous)	-0.208***	0.812	-0.206***	0.814				
	[<.0001]		[<.0001]					
ChinaIO (dummy)					-1.140***	0.32	-1.152***	0.316
					[<.0001]		[<.0001]	
Ret_{-1m}	0.059***	1.061	0.060***	1.062	0.059**	1.061	0.059***	1.061
	[<.0001]		[<.0001]		[<.0001]		[<.0001]	
$Logmcap_{-1m}$	-4.838***	0.008	-4.870***	0.008	-4.693***	0.009	-4.709***	0.009
	[<.0001]		[<.0001]		[<.0001]		[<.0001]	
$RetStd_{-1m}$			0.012	1.01			0.036***	1.036
			[<.0001]				[<.0001]	
$BAspread_{-1m}$			0.247***	1.28			0.249***	1.282
			[<.0001]				[<.0001]	
Likelihood ratio	62,000		62,872		61,453		62,337	
SCORE	33,658		35,874		32,952		35,234	
WALD	12,676		12,358		12,704		12,391	
Observations	128,015		128,015		128,015		128,015	

Table 9

Top 10 Protected Firms based on Market Capitalization in 2010

Name	Market cap ($million)	$Abnret_{1,20}$ (%)	$Ret_{1,20}$ (%)	Ret_{-1m} (%)	BM_{-1m}	IOperc	ChinaIO (%)	Industry	Country
Swire Pacific Limited Class B	6,499	0.017	3.122	0.049	1.295	12.11	0.00	Real Estate	China
Longfor Properties Co. Ltd	5,678	-0.028	-4.321	0.089	0.366	4.91	0.21	Real Estate	China
GCL-Poly Energy Holdings Ltd	3,610	-0.047	-5.765	-0.014	0.576	22.19	20.11	Energy	China
China Resources Cement Holdings Ltd	3,237	-0.074	-11.702	0.066	0.488	9.14	0.82	Materials	China
SJM Holdings Limited	3,129	0.114	6.795	0.114	0.504	6.08	0.11	Gaming	Macau
Mongolia Energy Corporation Ltd	2,555	0.014	1.488	-0.116	0.666	2.09	0.00	Energy	China
Glorious Property Holdings Ltd	2,380	-0.073	-4.328	-0.022	0.946	8.85	0.46	Real Estate	China
Sany Heavy Equipment International	2,303	-0.032	-4.008	0.086	0.304	12.14	0.34	Industrials	China
Greentown China Holdings Ltd.	2,254	-0.063	-13.352	0.056	0.696	6.22	1.94	Real Estate	China
Brightoil Petroleum (Holdings) Ltd	2,243	0.076	9.700	0.121	0.232	2.73	0.77	Energy	China

Figure 1: Time Series of Total HKex Stocks and Shortable Stocks

The total number of traded stocks and shortable stocks is plotted daily from the period July 3, 2006 to August 13, 2010.

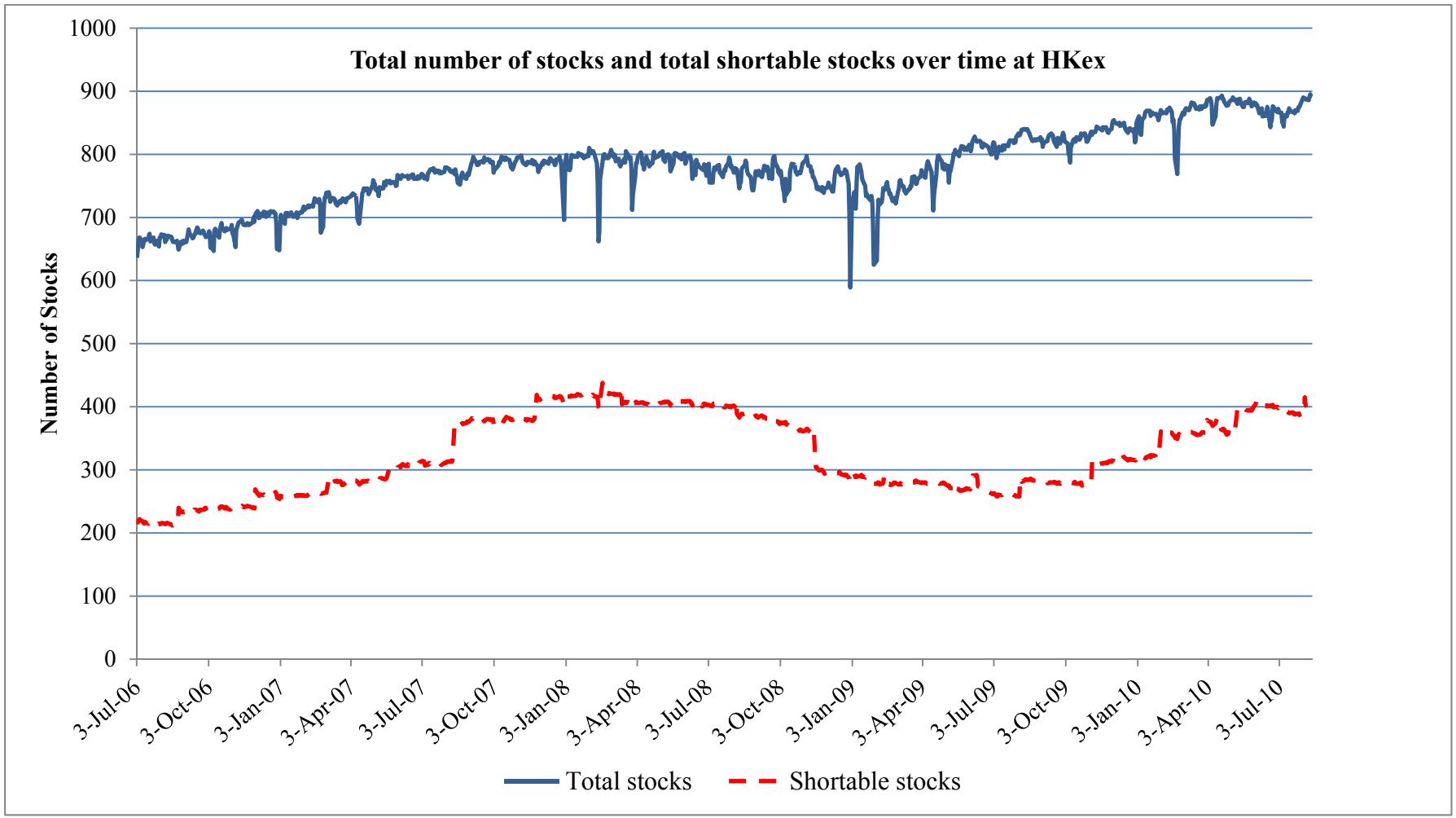


Figure 2: Time Series of Average Shorting based on all HKEx Stocks from July 3, 2006 to August 13, 2010

The average SIR and SIV across all traded stocks over the previous 5 days are plotted daily, where SIR and SIV are the number of shares shorted relative to the total number of shares outstanding in percentage and relative to the daily average trading volume, respectively.

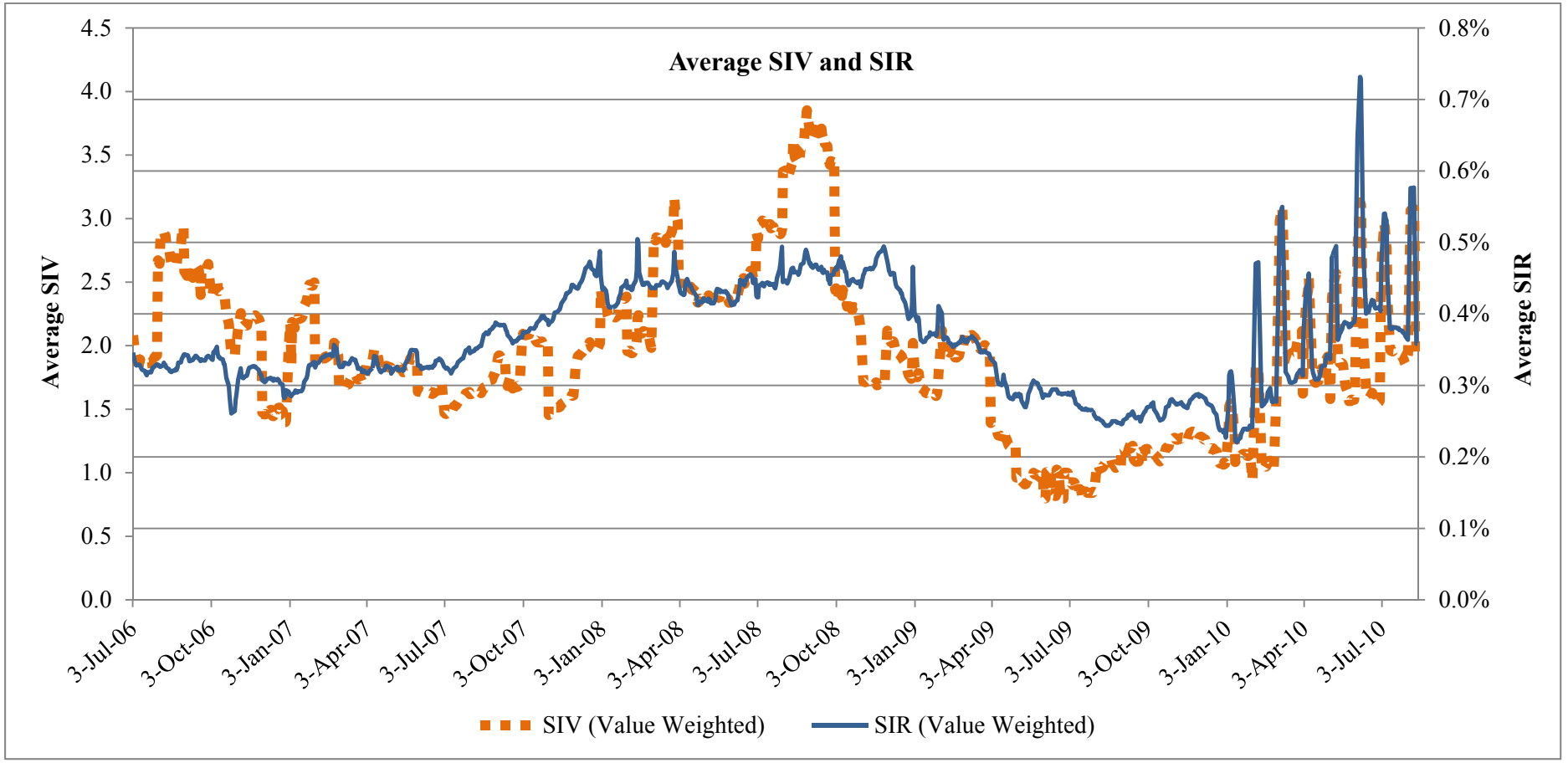
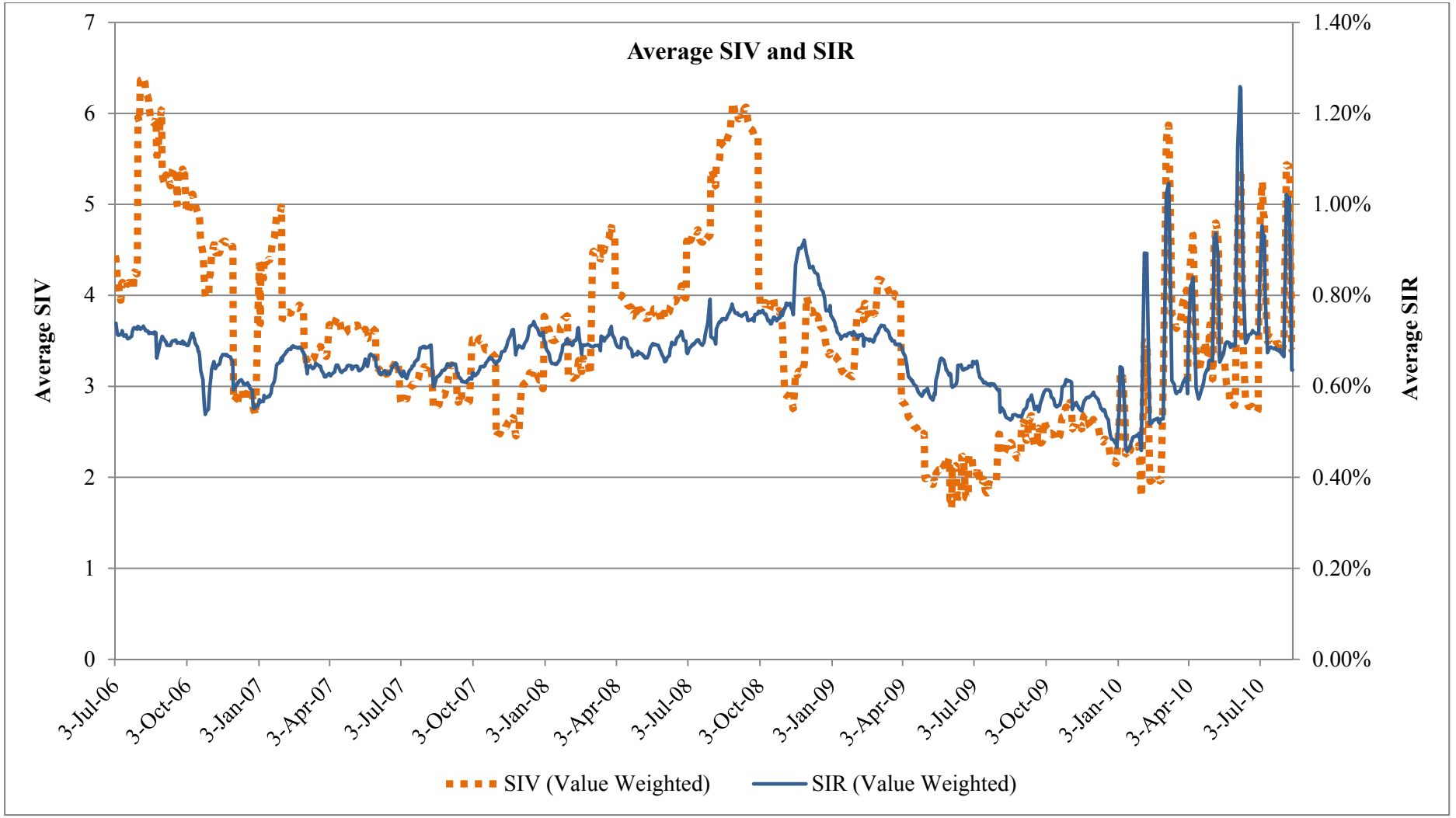


Figure 3: Time Series of Average Shorting Based on the Sample of Shortable Stocks on the HKEx from July 3, 2006 to August 13, 2010

The average SIR and SIV across all shortable stocks over the previous 5 days are plotted daily, where SIR and SIV are the number of shares shorted relative to the total number of shares outstanding in percentage and relative to the daily average trading volume, respectively.



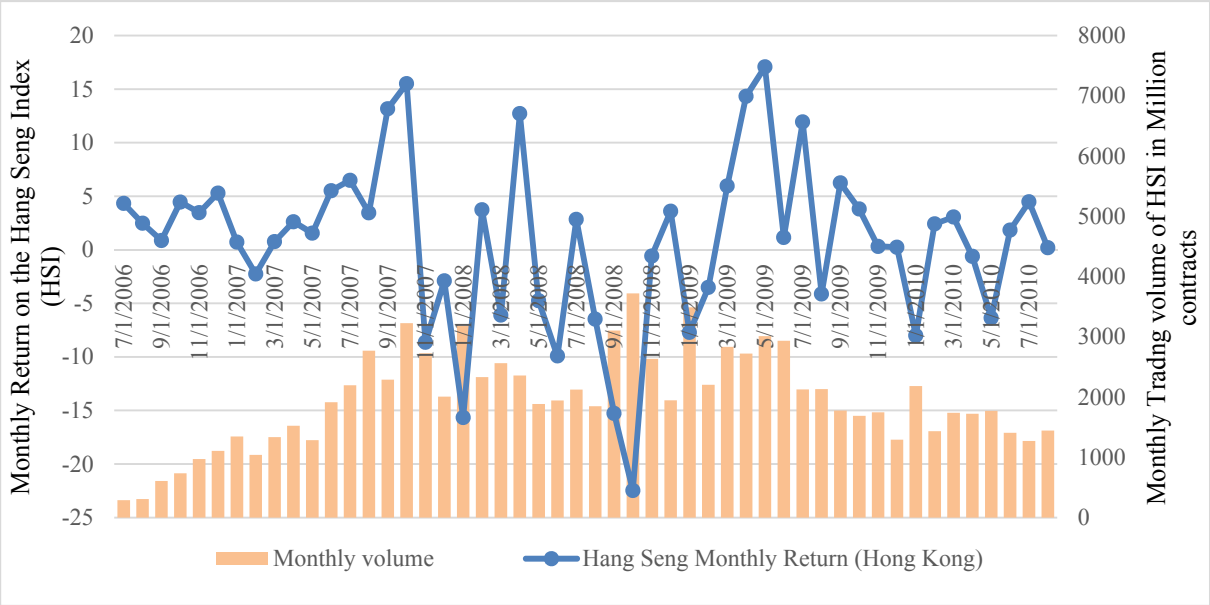
Appendix 1.

Review of HKEx Short Selling System (Source: https://www.hkex.com.hk/eng/market/sec_tradinfo/regshortsell.htm)

- A pilot scheme for regulated short selling was introduced by the HKEx in January 1994, which allowed 17 securities to be short sold, given that the short sale was not made below the best current ask price (the "tick-rule")
- In March 1996, the scheme was revised with an increase in number of securities that can be short sold and the abolishment of the tick rule.
- In September 1998, the tick rule was reintroduced due to changes in market conditions
- The list of designated securities for short selling is revised each quarter and posted in the HKEx's website.
- HKEX has provided guidelines on their selection criteria for designed securities to be short sold, including
  a. all constituent stocks of indices which are the underlying indices of equity index products traded on the Exchange;
  b. all constituent stocks of indices which are the underlying indices of equity index products traded on Hong Kong Futures Exchange Limited (HKFE);
  c. all underlying stocks of stock options traded on the Exchange;
  d. all underlying stocks of Stock Futures Contracts (as defined in the rules, regulations and procedures of HKFE) traded on HKFE;
  e. stocks eligible for structured product issuance pursuant to Rule 15A.35 of the Main Board Listing Rules or underlying stocks of Structured Product traded on the Exchange;
     - Rule 15A.35 requires at least HK$1 billion market capitalization for 60 consecutive trading days without dealing suspension or no more than 70 consecutive trading days that are comprised of 60 trading days without dealing suspension.
  f. Exchange Traded Funds approved by the Board in consultation with the Commission;
  g. all securities traded under the Pilot Program;
  h. stocks that have been listed on the Exchange for not more than 60 trading days, with a public float capitalization of not less than HK$10 billion for a period of 20 consecutive trading days commencing from the date of their listing on the Exchange and an aggregate turnover of not less than HK$200 million during such period;
  i. all underlying stocks of Structured Product which is based on one single class of shares traded on the Exchange; and
  j. applicable Market Making Securities approved by the Board in consultation with the Commission.

- The major requirements for Exchange Participants to short sell stocks includes:
  a. Exchange Participants must have the presently exercisable and unconditional right to possess the security in the purchaser.
  b. Short selling shall be restricted to securities in the designated list that takes effect on the Exchange during the Continuous Trading Session.
  c. Exchange Participants must indicate the short selling order in a manner that shall be determined by the Exchange, when the short sale order is inputted into the AMS/3 system.
  d. Exchange Participants must comply with the tick rule, which demands that short selling of Designated Securities are not to be made below the best current ask price, except for Designated Security that is an Exchange Traded Fund under the Pilot Program or an Exchange Traded Fund that has its exclusion from the tick rule approved by the Commission.
  e. Exchange Participants participating in short selling activities shall obey with the Ordinance at all times and the exchange-approved Regulations regarding short selling in the Eleventh Schedule to these Rules.

Panel A. Performance of the Hang Seng Index during the Sample Period



Panel B. Performance Overview of our Sample of the HKEx Stocks during the Sample Period

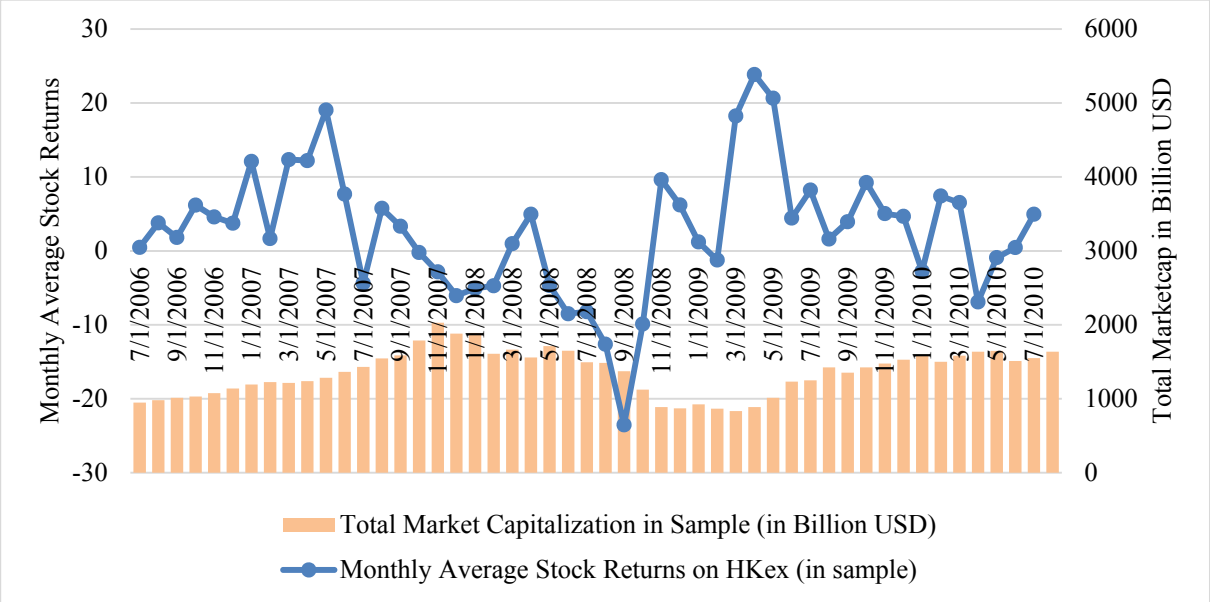


Figure A.2.
Overview of the HKEx from July 2006 to August 2010

During the sample period of the HK exchange total market capitalization ranged from about USD1,000 Billion to 2,000 Billion. Our sample captures about 80-90% of the total market capitalization (showing in Panel B). The in-sample average market capitalization was about USD 1.5 Billion.

Table A. 3.
Subsample Summary Statistics of shortable and Non-Shortable Stocks
The variables descriptions are provided in Table 1.

Panel A. Shortable Stocks

	2006 -2008				2009-2010			
Variable	**N**	**Mean**	**Median**	**STDEV**	**N**	**Mean**	**Median**	**STDEV**
$Ret_{1,20}$ (%)	208,128	-1.40	-1.31	16.75	128,015	4.39	2.11	15.69
$Logmcap_{-1m}$	208,128	6.78	6.49	1.50	128,015	6.98	6.83	1.43
BM_{-1m}	208,128	0.89	0.68	0.87	128,015	1.14	0.85	1.13
$Turn_{-1m}$ (%)	208,128	0.30	0.17	0.48	128,015	0.38	0.21	0.62
$RetStd_{-1m}$ (%)	208,128	3.07	2.64	2.19	128,015	3.02	2.74	1.63
Ret_{-1m} (%)	208,128	-0.02	-0.01	0.17	128,015	0.05	0.02	0.18
IOperc (%)	208,128	13.52	9.68	14.75	128,015	13.02	9.01	13.49
$SIR_{-5,-1}$ (%)	208,128	0.61	0.14	1.13	128,015	0.59	0.17	1.15
Missclassified					128,015	0.12	0.00	0.33

Panel B. Non-shortable Stocks

	2006 -2008				2009-2010			
Variable	**N**	**Mean**	**Median**	**STDEV**	**N**	**Mean**	**Median**	**STDEV**
$Ret_{1,20}$ (%)	260,811	2.30	-0.51	28.08	205,071	6.22	1.61	23.07
$Logmcap_{-1m}$	260,811	4.14	4.14	1.12	205,071	4.29	4.26	1.08
BM_{-1m}	260,811	1.32	1.00	1.28	205,071	1.72	1.27	1.62
$Turn_{-1m}$ (%)	260,811	0.39	0.09	1.36	205,071	0.34	0.09	1.01
$RetStd_{-1m}$ (%)	260,811	4.51	3.50	4.74	205,071	4.11	3.40	3.27
Ret_{-1m} (%)	260,811	0.02	-0.01	0.32	205,071	0.08	0.02	0.26
IOperc (%)	260,811	4.08	0.20	8.57	205,071	4.18	0.30	9.04
$SIR_{-5,-1}$ (%)	260,811	0.00	0.00	0.00	205,071	0.00	0.00	0.00
Protected					205,071	0.14	0.00	0.35

Table A. 4.
Cross Sectional Returns and the Role of Deviation from the Shortability Model (By Size Quartiles Including Additional Shorting Intensity Controls)

The dependent variable is the future 5-day ($Ret_{1,5}$) or 20-day ($Ret_{1,20}$) cumulative holding period return in percentage for stock *i* from day *t* in each within size quartile regression. The explanatory variables $Logmcap_{-1m}$, BM_{-1m}, $RetStd_{-1m}$, $BAspread_{-1m}$, $Winner_{-1m}$ and $Loser_{-1m}$ are the same as defined in Table 3. The *Shortable* dummy takes on the value of one when shorting is permitted by regulators for the specific stock. *Shortable-diff* takes on the value of 1 (-1) if the stock is shortable (not shortable) but should not be shortable (should be shortable) based on the model prediction; otherwise it is 0. $HighSIV_{-1}$ dummy takes on the value of one for stocks with *SIV* from the top decile of the distribution during the previous day where *SIV* is the number of shares shorted relative to the average daily trading volume. The coefficient estimates from Fama-Macbeth regression are reported with the corresponding Newey-West adjusted *t*-stats with lag=6 for the 5-day return regressions and with lag=21 for the 20-day return regressions based on the sample period of Jan. 1. 2009 to Aug 13, 2010. We denote statistical significance at 1 %, 5%, and 10% levels, with ***, **, and *, respectively.

	Cumulative 5-day future returns				**Cumulative 20-day future returns**			
	Small (Q=1)	**Medium (Q=2)**	**Medium (Q=3)**	**Large (Q=4)**	**Small (Q=1)**	**Medium (Q=2)**	**Medium (Q=3)**	**Large (Q=4)**
Intercept	4.422***	1.410	0.911	0.210	15.054***	7.052	3.986	2.291
	(5.13)	(1.29)	(0.99)	(0.25)	(3.76)	(1.53)	(1.27)	(0.68)
$Logmcap_{-1m}$	-0.740***	-0.120	0.090	-0.182***	-1.920**	-0.532	0.320	-0.722***
	(-3.82)	(-0.61)	(0.58)	(-2.94)	(-2.46)	(-0.64)	(0.54)	(-2.79)
BM_{-1m}	-0.048	0.048	0.032	0.183	-0.337	0.064	0.190	0.635
	(-0.80)	(0.95)	(0.52)	(1.41)	(-1.40)	(0.38)	(0.75)	(1.02)
$RetStd_{-1m}$	-0.003	0.046	-0.059	0.045	-0.121	0.081	-0.138	0.254
	(-0.06)	(0.98)	(-1.19)	(0.67)	(-0.80)	(0.41)	(-0.67)	(1.16)
$BAspread_{-1m}$	-0.021	0.029	-0.074	-0.099	-0.083	0.133	-0.284	-0.487*
	(-1.00)	(0.76)	(-1.21)	(-0.89)	(-1.24)	(1.10)	(-1.45)	(-1.70)
$Winner_{-1m}$	-0.040	0.014	0.029	-0.022	0.273	0.065	0.251	0.087
	(-0.21)	(0.08)	(0.20)	(-0.18)	(0.37)	(0.12)	(0.59)	(0.29)
$Loser_{-1m}$	0.312**	0.030	0.128	0.087	1.643***	-0.087	0.188	0.037
	(2.03)	(0.20)	(0.83)	(0.60)	(2.92)	(-0.17)	(0.35)	(0.07)
Shortable	2.099**	0.296	-0.256	1.997***	8.902*	1.764	-0.653	6.687***
	(2.57)	(0.78)	(-1.35)	(4.38)	(1.67)	(1.28)	(-0.79)	(4.57)
Shortable-diff	-2.584***	-0.215	0.384**	-1.501***	-13.618**	-0.187	1.392**	-5.798***
	(-2.70)	(-0.72)	(2.24)	(-3.76)	(-2.44)	(-0.23)	(2.24)	(-4.63)
$HighSIV_{-1}$	-0.439	0.043	-0.431**	-0.149	0.018	-0.656	-1.663*	-0.482
	(-1.62)	(0.14)	(-2.53)	(-1.64)	(0.02)	(-0.75)	(-1.80)	(-1.44)
R-Squared	0.062	0.068	0.082	0.135	0.061	0.063	0.086	0.170
Adj. R-Squared	0.025	0.026	0.040	0.095	0.024	0.021	0.044	0.132
Observations	83111	83333	83423	83219	83111	83333	83423	83219

Table A. 5.
Cross Sectional Returns and the Role of Protection and Misclassification
(By Size Quartiles Including Additional Control for Shorting Intensity)

The dependent variable is the future 5-day ($Ret_{1,5}$) or 20-day ($Ret_{1,20}$) cumulative holding period return in percentage for stock *i* from day *t* in each within size quartile regression. The explanatory variables $Logmcap_{-1m}$, BM_{-1m}, $RetStd_{-1m}$, $BAspread_{-1m}$, $Winner_{-1m}$ and $Loser_{-1m}$ are defined in Table 3. The *Shortable* dummy takes on the value of one when shorting is permitted by regulators for the specific stock. *Protected* is a dummy variable that takes on the value of 1 which should be shortable according to the model but are not shortable by regulators. *Misclassified* is a dummy variable that takes on the value of 1 if the stock is shortable but should not be shortable according to the model. $HighSIV_{-1}$ dummy takes on the value of one for stocks with *SIV* from the top decile of the distribution during the previous day where *SIV* is the number of shares shorted relative to the average daily trading volume. The coefficient estimates from Fama-Macbeth regression are reported with the corresponding Newey-West adjusted *t*-stats with lag=6 for the 5-day return regressions and with lag=21 for the 20-day return regressions based on the sample period of Jan. 1. 2009 to Aug 13, 2010. We denote statistical significance at 1 %, 5%, and 10% levels, with ***, **, and *, respectively.

	Cumulative 5-day future returns				**Cumulative 20-day future returns**			
	Small (Q=1)	**Medium (Q=2)**	**Medium (Q=3)**	**Large (Q=4)**	**Small (Q=1)**	**Medium (Q=2)**	**Medium (Q=3)**	**Large (Q=4)**
Intercept	4.423***	1.477	0.789	1.957***	15.169***	6.699	3.728	8.028***
	(5.17)	(1.41)	(0.92)	(2.78)	(3.85)	(1.51)	(1.37)	(2.59)
$Logmcap_{-1m}$	-0.738***	-0.132	0.063	-0.121*	-1.947**	-0.442	0.233	-0.486*
	(-3.83)	(-0.70)	(0.45)	(-1.80)	(-2.54)	(-0.55)	(0.47)	(-1.79)
BM_{-1m}	-0.050	0.046	0.027	0.124	-0.350	0.066	0.173	0.400
	(-0.85)	(0.93)	(0.44)	(0.96)	(-1.48)	(0.38)	(0.67)	(0.65)
$RetStd_{-1m}$	-0.003	0.046	-0.048	0.008	-0.122	0.082	-0.114	0.112
	(-0.06)	(0.96)	(-0.99)	(0.12)	(-0.80)	(0.40)	(-0.57)	(0.50)
$BAspread_{-1m}$	-0.021	0.031	-0.051	-0.230**	-0.084	0.127	-0.200	-1.015***
	(-0.99)	(0.77)	(-0.87)	(-2.06)	(-1.26)	(1.04)	(-1.07)	(-3.03)
$Winner_{-1m}$	-0.045	0.021	0.041	-0.022	0.283	0.012	0.324	0.080
	(-0.23)	(0.12)	(0.30)	(-0.18)	(0.39)	(0.02)	(0.83)	(0.25)
$Loser_{-1m}$	0.312**	0.026	0.132	0.049	1.654***	-0.103	0.219	-0.064
	(2.03)	(0.18)	(0.86)	(0.33)	(2.93)	(-0.21)	(0.40)	(-0.12)
Protected	2.557***	0.307	-0.109	-0.157	13.751**	0.705	-0.580	0.336
	(2.75)	(0.80)	(-0.78)	(-0.58)	(2.46)	(0.61)	(-1.08)	(0.40)
Misclassified	0.721	0.119	0.622*	-0.526	1.702	1.713	1.581	-2.952**
	(1.26)	(0.42)	(1.75)	(-0.99)	(0.84)	(1.50)	(1.55)	(-2.53)
$HighSIV_{-1}$	-0.114	0.123	-0.442***	-0.160*	0.630	-0.494	-1.583*	-0.529
	(-0.39)	(0.39)	(-2.62)	(-1.77)	(0.65)	(-0.53)	(-1.86)	(-1.58)
R-squared	0.061	0.067	0.083	0.128	0.060	0.062	0.087	0.158
Adj. R-squared	0.025	0.026	0.041	0.090	0.025	0.020	0.045	0.121
Observations	83111	83333	83423	83219	83111	83333	83423	83219