

Short-Sales in Global Perspective

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Abstract: Short-selling differs significantly around the world, and practice depends not only on regulatory structure but upon costs and tax considerations. Our survey of world markets suggests that, while as much as 93 percent of the world's equity market by capitalization is shortable, there are particular regions of the world where it is difficult to take a short position. These include several countries in Southeast Asia and South America. When dual listings in markets allowing short-sales are considered, the capitalization that is potentially shortable increases to 96 percent. In this paper, we examine what factors in the global equity universe are not shortable and consider the implications for long-short strategies tied to global indices and futures instruments. We find important periods when an index of non-shortable securities is a major determinant of the global equity portfolio. We ask whether short-sales constraints are binding on global index arbitrage.

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Over the last three decades, world capital investors have participated in a dramatic rebirth of global equity markets. From a low point in the immediate post-War era, the number and capitalization of global stock markets has grown dramatically – punctuated, of course, by occasional financial crises. We are now quite nearly back to the point the world equity markets had reached about a century ago, but with a fundamentally different financial architecture. The former world equity markets were dominated by exchanges in a few capitals of colonial empires: London, Brussels and Paris. Now, considerable trading takes place in local exchanges according to local laws, regulations and practice.

In this paper we collect information on short-sales regulation and practice about more than eighty markets around the world. Our survey of world markets suggests that, while as much as 93 percent of the world's equity market capitalization is potentially shortable, there are particular regions of the world where it is difficult to take a short position. These include several countries in Southeast Asia and South America. When dual listings in markets allowing short-sales are considered, the potentially shortable capitalization increases to 96 percent. These numbers, however, mask important constraints to the global investor due to the inability to short particular sectors of the equity universe. In this paper, we examine what factors in the global equity universe are not shortable and consider the implications for long-short strategies tied to global indices and futures instruments. We find important periods when an index of non-shortable securities is a major determinant of the global equity portfolio. We ask whether short-sales constraints are binding on global index arbitrage.

The issue of short sales is important from the broad perspective of global equity market development. Our previous research has shown that markets which prevent or do

not practice short sales are characterized by poor information diffusion and price discovery.¹ While stocks in these markets might be slightly less prone to extreme price drops, they are also less efficiently priced. Investors who rely upon the fundamental efficiency of a market price are likely to prefer these trading environments-- all things equal, liquidity and a level playing field are preferred by international investors. Evidence in the current paper strongly supports this trend. For a large sample of countries in which short sales are not allowed or not practiced in the local market, we find a migration of capital over the last decade towards the ADR or GDR market. Simply put, markets with regulations facilitating efficiency are winning the battle for international capital flows (see Table 4).

Aside from these broad issues of global exchange competition and efficiency, however, the issue of whether a security is easily shortable is an important one for many sophisticated institutional investors and investment managers who hedge equity and index positions on a regular basis. These activities include everything from hedging spreads in ETF's such as MSI EAFE iShares traded on the AMEX, to establishing off-setting exposures for a global equity portfolio tracking a world investment benchmark. With respect to this hedging activity, the question we pose in this chapter is whether the short sales constraints in markets around the world have any material effect on the capacity of an investor to hedge an international equity index.

The chapter is structured as follows. In the next section we describe regulation and practice of short-sales in global equity markets, using the data collected from our study "Efficiency and the Bear: Short Sales and Markets Around the World." In the third

¹ See, for example, Lamont (2002) and a chapter in this volume, as well as Bris, Goetzmann and Zhu (2003).

section of the chapter we explore the time-trends in the shortable vs. non-shortable components of world equity markets. Section four focuses on the degree to which the dynamics of the world equity index can be captured by shortable securities, and by the same token, how important are the effects of having to exclude non-shortable securities from a hedge position. Section five draws conclusions from our study – the main result being that there are key episodes in global financial markets during which the non-shortable component of the world equity portfolio is important. To the extent that a global hedging strategy is designed to protect the investor against occasional, risky events, the non-shortable component of the world portfolio might represent a binding constraint on the ability to bound investor value-at-risk. While the growth in the ADR listings over the past decade has helped to some extent, we find that a portfolio of ADR/GDR stocks are not a good proxy for those that continue to list solely in markets for which short-sales are restricted.

Short-Sales Restrictions Around the World

We draw our data on international short-sales practices from several sources, including investment banks, regulators, specialized publications, and standard finance databases. Two investment banks generously provided information about current practice. The Morgan Stanley Dean Witter Global Network Management Division (GNM) gave us a summary of information for 59 countries about short-sales regulation and practice, compiled by their global network of sub-custodian banks. The International Securities Lending Division at Goldman Sachs (ISL) gave us similar data. The ISL also

contained information about the tax implications of securities lending and short-sales for 46 countries. Both datasets indicated that there are several countries around the world in which short-selling is allowed. These sources were sometimes at odds with a widely used guide, the *Worldwide Directory of Securities Lending and Repo* (WDSLPR). We resolved this ambiguity by requesting further information from institutions listed in the WDSLPR as facilitating short-sales in countries that apparently prohibit short-sales. In most cases the banks were accurate in characterizing these markets as lacking short-sales capabilities. Singapore is the only country in the dataset where short selling is practiced but not formally allowed. Short-sales in Singapore are typically executed off-exchange between depository agents. Our published resources also included the International Securities Services Association (ISSA) Handbook.

For 59 countries we augmented the bank and published information with data collected from direct inquiries to the exchanges and regulatory bodies governing the markets. This information allowed us to document changes in regulation and practice through time. Not only are we interested in current practice, but the shifts in short-sales restrictions through time are particularly important for understanding the development of the global investing environment in the recent era, and also allowed us to perform relatively powerful tests of the effects of short-sales on markets and investment flows.

In the course of contacting regulators and market participants in various countries around the world, we were able to develop some understanding of the major factors governing their views on short-sales restrictions. We circulated a formal survey to all market regulators in countries with stock markets, and in this survey, we asked specific

questions about the perceived need for the regulation of short-sales.² We found that regulators were largely concerned with market efficiency and the probability of market crashes. The representative of the Estonian market regulatory body, for instance, discussing the effects of using the proceeds of short-sales to then purchase other securities, mentioned to us that *“as the Estonian market is rather small, any type of financial leverage can create a bubble effect on the market very quickly, and therefore it makes markets risky.”* The representative of the Hellenic Capital Market Commission in Greece reported to us that *“[the availability of short sales]...is expected to present multiple advantages as regards the liquidity and reliability of the market. More specifically, it is expected to help in the rationalization of prices of shares and the restriction of their extreme fluctuations.”* These and many other comments helped us formulate a series of research questions we hoped would be of use to regulators in their future consideration of short-sales rules and practices. In our previous work cited above, we tested the proposition that short-sales restrictions made markets less informationally efficient, and we also tested whether markets with short-sales restrictions were less prone to precipitous price declines. We found positive evidence on both of these questions. In this chapter, we turn to broader questions about the effects of short-sales restrictions on global investing and international capital flows.

Table 1 summarizes our information about short-sales regulations and practice. Out of the 59 countries in the GNM dataset, we exclude the countries for which we could not find individual firm stock price data. This leaves a sample of 47 countries. In 35 of these, short selling was allowed as of December 2001, the final date of our sample period.

² In particular, we asked (1) Whether your country has a “short-selling” regulation, (2) if there has been a change in “short-selling” regulation, (3) the major restrictions (if any) that exist in the country, and (4) the expert opinion on the impact of changes in regulation on the stock market.

In 12 of these 47, short-sales were prohibited for the entire sample period of January, 1990 to December, 2001. In 12 of the 35 countries where short-sales are currently allowed, restrictions existed in 1990 but were lifted at some point within the sample period. These countries are: Chile, Hong Kong, Hungary, Malaysia, New Zealand, Norway, Philippines, Poland, Spain, Sweden, Thailand, and Turkey. In three cases—Malaysia, Hong Kong, and Thailand—restrictions on short selling were removed and later re-enacted gradually.³

There is clearly a difference between what the law allows and what is common practice. Although short selling is currently legal in most countries, it is only practiced in 28. In some countries, tax rules significantly inhibit short sales. In Chile for instance, although short selling and securities lending have been possible since 1999, they are rarely used because lending is considered an immediate, taxable sale. Given that there is no sale price, the relevant price is the highest price of the stock on the day it is lent; if it is

³ In Malaysia, the Securities Commission issued in December 1995 the Guidelines on Securities Borrowing and Lending, and the Securities Industry Act of 1993 was amended to allow short sales. The regulatory changes came into force on March 7, 1996, and allowed the local exchange—the Kuala Lumpur Stock Exchange—to enact short-selling rules. With that, regulated short selling commenced on September 30, 1996. However, in August 28, 1997, and in the onset of the Asian financial crises, these activities were suspended as interim measures to prevent excessive volatility in the markets. In February, 2001 the Securities Commission launched a plan—the Capital Market Masterplan—that recommended the re-introduction of short selling and securities lending activities.

In Hong Kong, short selling was prohibited before January 3, 1994. The SEHK then allowed 17 out of the 33 constituent stocks of the Hang Seng Index (HSI) to be sold short subject to several restrictions. These restrictions were lifted on March 25, 1996 at the same time that 113 of the firms listed on the exchange, including all the constituent stocks of the index, were allowed to be sold short.

In Thailand, the Securities Exchange Commission first enforced short-sales regulations on July, 1997, suspending them because of the currency crises. Beginning on January 1, 1998, short sales were allowed again in the Thai capital market, through financial institutions licensed to operate securities borrowing and lending (SBL) business. The practice of short selling has increased gradually: in 1999 there were only three securities companies licensed to operate SBL. Although ISL and GND characterize Thailand as a country where short sales are a common practice, market regulators were aware of only one transaction since 1997, apart from “mistaken” transactions done by brokers.

higher than the purchase price, capital gains tax will apply. In Turkey, stock lending is treated as a normal transaction by the tax authorities, and as such it is liable to capital gains tax. In Finland, transfer laws also place a serious burden on this activity. In the Philippines and Turkey short selling is allowed but the rules are not clearly defined. In Thailand, evidence of the practice of shorting is murky. Regulators in that country believe that short selling is not practiced because the market for borrowing stock is very narrow, especially on the supply side, due to the absence of a futures market.

There are some other features of short-selling practices throughout the world that are relevant for our purposes. In some markets only the largest and most liquid stocks may be shorted. Until 1996, Hong Kong only allowed short sales in securities specifically designated by the Hong Kong Exchanges and Clearing Ltd. A similar rule currently operates in Greece. More objective criteria are found in Poland, where any security with a market capitalization of at least 250 million zloty qualifies. We adopt the convention of classifying Hong Kong as a country where short selling is allowed only after 1996, even though it was allowed for a subset of stocks beginning in 1994.⁴ For Poland and Greece, GNM reports that short selling is not practiced.

We also regard short selling as allowed and practiced in a country even if some investors are prohibited from entering into such transactions. In Sweden, for example, traders take short positions without borrowing the shares in advance,⁵ while individual investors must borrow the shares before they go short. In Greece prior to 2001, short selling was only available to the members of the Athens Derivatives Exchange. Some countries only impose short-sales restrictions on foreign investors. In Brazil, for instance,

⁴ See footnote 3.

⁵ They must borrow the stock before the end of the day, however.

a short seller must have a domestic legal representative. In India, foreign investors are prohibited from short selling. In fact, every country in the sample has its own law, custom and environment that determine the capacity and costs of short-sales.

We classify countries into four groups, depending on whether short selling is legal and practiced. In the first group we have the countries where short selling became legal some time before 1990, and where short selling is currently practiced. This group includes the U.S., the U.K., Australia, Austria, Belgium, Canada, the Czech Republic,⁶ Denmark, France, Germany, Ireland, Italy, Japan, Luxembourg, Mexico, the Netherlands, Portugal, South Africa, and Switzerland. The second group consists of the countries in which short sales were prohibited as of December, 2001. These are: Colombia, Greece, Indonesia, Jordan, Pakistan, Peru, Singapore, the Slovak Republic, South Korea, Taiwan, Venezuela, and Zimbabwe. The third group is comprised of countries in which short selling is allowed but rarely practiced: Argentina, Brazil, Chile, Finland, India, Israel, New Zealand, the Philippines, Poland, Spain,⁷ and Turkey. Finally, the remaining five countries—Hong Kong, Norway, Sweden, Malaysia, and Thailand—comprise a group for which short-sales regulation and practice changed sometime between January, 1990 and December, 2001.

The classification above ignores firm specific information, as well as gradations within country of cost and difficulty of taking and maintaining a short position. Even within the U.S. these are known to have pricing effects. For instance, the feasibility of

⁶The Prague Stock Exchange was established on November 1992, and the automated trading system started operations in January 1993. We include the Czech Republic in the group of countries where short selling is allowed and practiced, although we only have data on Czech firms since 1993.

⁷Chile made short selling legal only in 2000, but there is no current practice. Spain legalized short selling in 1992, but only securities lending facilities are common among institutions, as a way of facilitating hedging strategies.

short-sales may depend in some cases on the existence of a futures instrument. In some countries futures are traded only for a subset of stocks, usually the most liquid or largest. We ignore such within-country differences to simplify our analysis, but these can be of paramount consideration to market participants. Where short-sales are restricted or prohibitively expensive, however, another mechanism for shorting sometimes exists: dual listed shares.

Foreign Listing and Short Selling

Over the last two decades, one of the most significant institutional changes in international investing has been the growth of the depository receipt market in the U.S. and Europe. Once restricted to a very few bell-weather securities from a handful of non-U.S. exchanges, ADRs now allow domestic investors to achieve considerable exposure to the world equity markets without leaving the comfort of the U.S. regulatory environment. A major factor in this domestic environment, of course, is the ability to short a stock. A good example is Nokia, which represents about 2/3 of the total market capitalization of the Helsinki Stock Exchange (HEX). As per our own data, Finland is a country where short sales are not practiced. However, Nokia has been listed on the New York Stock Exchange since July 1, 1994. These Nokia depository receipts can be shorted, although only in the U.S.⁸ Thus, taking into account shares that list abroad, the percentage of the Finnish market that is shortable is 66.13 percent at the end of 2002 (see Table 2). Hence,

⁸ Indeed, there are five Finnish companies in our database that list in the U.S.: Nokia (direct listing in NYSE since 7/1/94), Metso Corporation (direct listing in NYSE since 7/1/99), Stora Enso Oyj (ADR in NYSE since 9/1/00), UPM-Kymmene (ADR in NYSE since 6/29/99), and Instrumentarium Corporation (ADR in Nasdaq since 8/18/83).

these shortable components of national exchanges must be considered when examining the effects of short-sales restrictions on markets.

We compile data on non-U.S. companies that list in NYSE, Nasdaq and the LSE. We obtain data on U.S. listings directly from the NYSE.⁹ Data for the London Stock Exchange comes from the Exchange's website. We obtain the date of the first listing of each foreign firm in these markets via direct listing (IPO), ADRs (in the U.S.) and GDRs (in the U.K.). We also obtain from Datastream stock market information about all firms listed in the 59 countries in our database. In particular, we obtain stock price and capitalization data. For the countries and years where short sales are not allowed / not practiced, we decompose the market capitalization into domestic market capitalization of stocks with a foreign listing, and otherwise. The first group corresponds to stocks that can be shorted elsewhere, and we will call those the 'shortable portfolio'. We then construct value-weighted indices corresponding to the shortable portfolio and the non-shortable portfolio. In countries where short sales are allowed and practiced, the shortable portfolio is obviously the total market. Figure 1 shows the performance of these two indices over the period 1989 through 2002. Also included is a shortable index of only non-U.S. stocks. The figure suggests some meaningful differences between the shortable and non-shortable indices. The non-shortable index is more volatile than both of the shortable indices. The annual standard deviation of the non-shortable index is 24 percent, while the non-U.S. shortable index has an annual standard deviation of 19 percent. Including U.S. stocks drops the volatility to 16 percent over the time period.

⁹ We thank Gustavo Rodríguez from the NYSE for providing us with these data.

Table 2 shows that, without taking foreign listings into consideration, the percentage of the world market capitalization that is shortable varies between 89.35 percent in 1994 and 94.15 percent in 1999. When foreign listings are included, we find that up to 96.29 percent of the world market is shortable as of 2001. The numbers are very similar even if we exclude the U.S. markets from the calculations.

In Table 3 we specifically consider the countries where short sales are not allowed or not practiced, but where there are firms that list in a U.S. or U.K. market. The table illustrates the changing importance of cross-listings through time. The aggregate percentage of shortable capitalization via depository receipts for all short-sales restricted countries shows a moderate but significant increase from 29 percent in 1990 to 33 percent in 2002. However in some countries the shortable capitalization is considerable: in Brazil, Finland, and South Korea, more than 50 percent of the market is shortable via cross-border listings. In Norway more than 30 percent of the market was shortable even before short sales restrictions were removed in the country in 1996. While clearly the ability to short securities off-exchange will matter to asset pricing on the domestic exchange, our interest in this chapter is on the hedging capabilities of the global investor.

Figure 2 shows the effectiveness of a global equity hedge portfolio over the period 1991 through 2002. It is constructed by regressing a 12 month rolling-window of MSCI world equity index returns on our capital-weighted shortable portfolio, and alternatively on our shortable and our non-shortable indices. The two lines track the explanatory power of this regression over time. While the model performed pretty well on average – explaining between 85 percent and 95 percent of market moves, there were also clear interruptions in the ability of the cap-weighted portfolios to hedge the MSCI

World Index. The fraction of variance associated with tracking error, represented by 1 minus the R-square, was as high as 20 percent of monthly returns at certain times. Late 1993, summer of 1996 and most of 1999 represented notable periods of deviation. The graph suggests that during these periods, the basic linear model an investor might use to hedge the MSCI world index with a cap-weighted index of monthly returns -- either shortable alone or including non-shortable securities -- left occasional, significant exposures to tracking error.

The second Y axis on the chart records the implied portfolio weight accorded to the non-shortable portfolio. These weights are estimated via a technique pioneered by William Sharpe, which works by constraining the coefficients in the regression to be positive and sum to one -- thus effectively representing an achievable long-only composite benchmark.¹⁰ Note that there are four periods when the implied weight on the non-shortable index exceeds 20 percent. These correspond roughly to periods when the explanatory power of the hedging model declines, and when there are significant advantages to the inclusion of the non-shortable index. Note also that there are long stretches of time during which the implied weight on the non-shortable portfolio is zero -- indeed half the time, the weight on this factor is less than 5 percent. The clear implication of figure 2 is that the non-shortable index captures some factor in world equity returns that manifests itself only occasionally, and is associated with significant tracking error in a global hedging model.

The characteristics and respective significance of the shortable and non-shortable portfolios is evident when we isolate effects at the country level. Figure 3 reports the

¹⁰ The estimation procedure is performed with the Ibbotson Associates Encorr Attribution Model.

estimated portfolio weights for a regression of MSCI world index returns on the MSCI U.S. total return index, and the shortable and non-shortable portions of Argentina's stock market. In effect, we are explaining the world index with the U.S. and the two parts of the Argentinean market. Figure 4 shows the time-varying estimated positive portfolio weights for the U.S., shortable and non-shortable Argentinean market. Notice that the U.S. market dominates, however there are periods in which the non-shortable index is relevant. While this figure does not represent an explicit hypothesis test about the value of the non-shortable component of a country as a factor in market returns, it is certainly suggestive of this possibility.

Although the non-shortable component of the world index is small by capitalization, we find strong evidence that it is not irrelevant as a factor in the world equity markets. Even the recent growth of the depository receipt market has not eliminated the need to hold some portion of the non-shortable portfolio as a hedge against variations in the world equity index. One key reason for this might be the fact that dual listing of shares is driven by regulatory feasibility. Only firms that meet international accounting standards have the potential for dual listing. There is in fact considerable theoretical and empirical literature on the value of dual listing – in simplest terms it signals to investors that the company is strong enough and honest enough to abide by tougher standards than those imposed by its domicile exchange. However, as a result of this certification process, our analysis suggests that the money center exchanges screen out a significant factor in the world equity markets that occasionally explains market dynamics. Depository receipts appear to allow investors to buy and short the higher

quality stocks around the world on the major exchanges, but sometimes the movement of lower quality securities is an important trend.

Short Selling Constraints and International Capital Flows

A central concern of regulators is what factors explain shifts in international capital flows into and out of their domestic markets. Ever since the Asian currency crisis of 1997, economists and policy-makers have been concerned with the question of whether accommodating the needs of international investors actually exposes markets to financial crises brought on by, or at least exacerbated by, volatile international capital flows. One of the interesting questions our data allow us to answer is whether short-sales constraints have a positive or a negative effect on international capital flows to and from a market. There are reasonable arguments to be made on both sides of this question. Short-sales constraints, for example, might make a market more attractive to international investors because they may reduce the demand to sell stocks and thus reduce the risk of a crash. Thus, an investor may be attracted to markets with lower downside risk, all else equal. By the same token, short-sales constraints might be viewed as protection against the manipulation of share prices through “Bear Raids” that were blamed in the early 20th Century U.S. market crashes. For these reasons, a market that forbids short sales might attract a disproportionate share of global capital. On the other hand, short-sales constraints may be associated with limitations on the ability of an investor to hedge out long positions. Short-sales are a frequently-used risk control tool by U.S. investment managers. Any constraints on the ability to hedge positions might cause a manager to be wary of taking those positions in the first place. In addition, empirical evidence suggests

that short-sales constraints make markets less informationally efficient. All else equal, an efficient market will be more attractive to investors without a comparative informational advantage. Thus, markets that allow short-sales might attract passive investment.

We explore this issue by examining the international inflows and outflows of investment capital as a function of short-sales constraints. Given that we have a number of countries in our sample which have changed their short-sales policies during our sample period, we are able to test the effects of these policy decisions, while controlling for a host of other effects.

Our measure of capital inflows and outflows is based upon national income accounts. We obtain Foreign Direct Investment flows from the United Nations Conference on Trade and Development (UNCTAD) Division on Investment, Technology and Enterprise Development.¹¹ We model inflows and outflow separately, and include in the regression an indicator variable for the country-year if short sales are not legal or not practiced. For those countries that actually changed policy in the sample period, the

¹¹ Foreign direct investment (FDI) is defined as an investment involving a long-term relationship and reflecting a lasting interest and control by a resident entity in one economy (foreign direct investor or parent enterprise) in an enterprise resident in an economy other than that of the foreign direct investor. FDI implies that the investor exerts a significant degree of influence on the management of the enterprise resident in the other economy. Such investment involves both the initial transaction between the two entities and all subsequent transactions between them and among foreign affiliates, both incorporated and unincorporated. FDI has three components: equity capital, reinvested earnings and intra-company loans. FDI flows are recorded on a net basis (capital account credits less debits between direct investors and their foreign affiliates) in a particular year.

Inflows of FDI in the reporting economy comprise capital provided (either directly or through other related enterprises) by a foreign direct investor to an enterprise resident in the economy (called FDI enterprise). Outflows of FDI in the reporting economy comprise capital provided (either directly or through other related enterprises) by a company resident in the economy (foreign direct investor) to an enterprise resident in another country (FDI enterprise). Source: UNCTAD.

indicator equals one in the year following the change only. This panel regression has 459 observations of country-years, and the standard errors are adjusted by the usual techniques for serial correlation, and robustness to outliers. Since so many different factors could conceivably affect the attractiveness of cross-border investing, we control for three types of broad risks, consistent with the current literature: financial risk, political risk, and economic risk. All risk indices are obtained from the International Country Risk Guide, and they are time-varying for each country.¹² The specification also controls for year- and country-fixed effects so that the power of the results is based fundamentally on the countries that changed their policy during the sample period. Finally, we use the GDP of the county as a regressor, as well as GDP per capita, in order to control for differences in market scale and development. In any case, we also specify a regression with only those countries that change the regulatory regime in the sample period.

The regression output is reported in Table 4. The outflow regression has a negative coefficient on the short sales variable indicating that the relaxation of short sales constraints tended to reduce capital outflows, or conversely, the imposition of short sales constraints tended to reduce inflows. The magnitude of the coefficient is such that a one standard deviation increase in the short selling variable reduces outflows by 0.17 standard

¹² The financial risk variable is a composite index of several macroeconomic ratios: the percentage of foreign debt to GDP, foreign debt service as a percentage of exports of goods and services, current account as a percentage of exports of goods and services, net liquidity as months of import cover, and exchange rate stability. Financial risk ratings range from a high of 50 (least risk) to a low of 0 (highest risk). The political risk variable is an average of the following indicators: government stability, socioeconomic conditions, investment profile, internal conflict, external conflict, corruption, military in politics, religion in politics, law and order, ethnic tensions, democratic accountability, and bureaucracy quality. Risk ratings range from a high of 100 (least risk) to a low of 0 (highest risk). The economic risk index is the average of the component factors of GDP per head of population, real annual GDP growth, annual inflation rate, budget balance as a percentage of GDP, and current account balance as a percentage of GDP. Risk ratings range from a high of 50 (least risk) to a low of 0 (highest risk).

deviations (significantly different from zero at the 1 percent level).¹³ In economic terms, the second set of regressions show that allowing short sales in a country reduces investment outflows by \$5.2 billion per year, relative to an average of \$10.53 billion per year throughout the sample period (the coefficient is significantly different from zero at the 10 percent level). Moreover, outflows are larger when (i) both political and economic risks are lower, and (ii) financial risks are higher. While the regression tells us something about the determinants of outflows in this period, we learn little from the inflow regression. Although the sign on inflows is negative, it is not significantly different from zero at conventional statistical levels.¹⁴ Thus, while many things may influence cross-border capital flows – particularly over an interval that includes the Asian currency crisis, our basic test of the effects of short-sales constraints provides some evidence in favor of the proposition that international investors are attracted to markets that facilitate the capacity of hedging and the efficient diffusion of information.

Conclusion

An equilibrium theory of short-sales restrictions would posit that the distribution of short-sales restricted markets around the world is far from random. In a rational world in which a country could choose to allow or forbid short selling, some countries may have reasons for choosing one policy over the other – these reasons should logically have to do with fundamental differences between markets, whether due to the volatility of assets, the information structure of the industry, or even the political or macroeconomic landscape.

¹³ The standard deviations of the short sales dummy and the outflows variable is 0.50 and \$billion 26.358.

¹⁴ We have re-estimated the model using the net flows (inflows minus outflows) as the dependent variable, but the short-selling dummy is not significant.

Whatever these differences, however, they must be such that the short-sales regulatory policy somehow is optimal for that market. A case in point is Malaysia. During our sample period, Malaysia switched from allowing to disallowing to partly allowing short-sales. These policy choices were based upon the perceived advantages they provided for the stability and recovery of the domestic market.

Our empirical analysis of hedging and tracking error is largely consistent with this equilibrium view that the short-sales choice for countries – as well as for stocks – is potentially due to value-relevant cross-sectional economic differences. We see that non-shortable markets (or market components) behave differently at certain times, and that ignoring them, in effect, ignores a relevant dimension of risk in the world capital markets. Thus, our study suggests that there is something different about non-shortable stocks and countries other than that they are non-shortable, and even the continued development of depository receipt markets has not allowed global investors to capture or hedge these latent factors.

Although it is fascinating to provide even a little evidence on these lofty issues, the basic conclusions of our study are fairly straightforward. First, we find there are times in global market history when tracking error was significantly higher due to the exclusion of non-shortable securities from the portfolio. In practical terms that means hedging a long position in the world equity index will involve some level of risk, regardless of access to country factors via depository receipts. This first finding should be of interest to institutional investors and active long-short equity managers, and if nothing else, spur additional quantitative investigation. Our second finding is more likely to interest policy-makers who are concerned with attracting international investment flows. Allowing short

sales seems to reduce global capital outflows. Although we perform only one test of this proposition, it suggests that market efficiency and the ability to hedge investments are attractive factors to sophisticated global investors.

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Country	When was short selling allowed	When was securities lending allowed	Whether Short Selling is Practiced
Argentina	1999	1991	No
Australia	Before 1990	Before 1990	Yes
Austria	Before 1990	Before 1990	Yes
Belgium	Before 1990	Before 1990	Yes
Brazil	Before 1990	Before 1990	No
Canada	Before 1990	Before 1990	Yes
Chile	Allowed in 1999	Allowed in 1999	No
Colombia	Not allowed	Not allowed	No
Czech Republic	Before 1990	Before 1990	Yes
Denmark	Before 1990	Before 1990	Yes
Finland	Allowed in 1998	Before 1990	No
France	Before 1990	Before 1990	Yes
Germany	Before 1990	Before 1990	Yes
Greece	Not allowed	Not allowed	No
Hong Kong	Allowed in 1996	Before 1990	Yes
India	Before 1990	Before 1990	No
Indonesia	Not allowed	Allowed in 1996	No
Ireland	Before 1990	Before 1990	Yes
Israel	Before 1990	Before 1990	No
Italy	Before 1990	Before 1990	Yes
Japan	Before 1990	Before 1990	Yes
Jordan	Not allowed	Not allowed	No
Luxembourg	Before 1990	Before 1990	Yes
Malaysia	Allowed in 1995, Prohibited again in 1997	Allowed in 1995, Prohibited again in 1997	Yes
Mexico	Before 1990	Before 1990	Yes
Netherlands	Before 1990	Before 1990	Yes
New Zealand	Allowed in 1992	Not allowed	No
Norway	Allowed in 1992	Allowed in 1996	Yes
Pakistan	Not allowed	Not allowed	No
Peru	Not allowed	Not allowed	No
Philippines	Allowed in 1998	Allowed in 1998	No
Poland	Allowed in 2000	Before 1990	No
Portugal	Before 1990	Before 1990	Yes
Singapore	Not allowed	Before 1990	Yes
Slovak Republic	Not allowed	Not allowed	No
South Africa	Before 1990	Before 1990	Yes
South Korea	Not allowed	Before 1990	No
Spain	Allowed in 1992	Allowed in 1992	No
Sweden	Allowed in 1991	Allowed in 1991	Yes
Switzerland	Before 1990	Before 1990	Yes
Taiwan	Not allowed	Not allowed	No
Thailand	Allowed in 1997	Allowed in 1999	Yes
Turkey	Before 1990	Allowed in 1996	No
United Kingdom	Before 1990	Before 1990	Yes
United States	Before 1990	Before 1990	Yes
Venezuela	Not allowed	Not allowed	No
Zimbabwe	Not allowed	Not allowed	No

Table 1. Short Selling Restrictions Around the World

For each country in the sample, the table describes the date where short selling was allowed if this happened on or after 1990. Otherwise countries are classified as ‘Allowed Before 1990’, or ‘Not Allowed’. Securities Lending refers to the ability of an investor to borrow securities from another party. Short Selling refers to the ability of an investor to sell a borrowed security to a third party. Short Selling is practiced when there are indications from market participants, market regulators, or institutions within a country, that short selling is a common practice. Data is obtained from the Global Network Management Division at Morgan Stanley Dean Witter, the International Securities Lending at Goldman Sachs, the corresponding market regulators, the International Securities Services Association Handbook, and practitioners listed in the *Worldwide Directory of Securities Lending and Repo*.

Year	World Market Capitalization in Countries where:			World Market Capitalization			World Market Capitalization (Excluding the US)		
	Short Sales are Allowed and Practiced	Short-Sales are Not Allowed / Not Practiced	Ratio	Shortable	Non-Shortable	Ratio	Shortable	Non-Shortable	Ratio
1990	\$81,163,692	\$5,827,897	93.30%	\$81,553,367	\$5,438,222	93.75%	\$56,865,489	\$5,438,222	91.27%
1991	\$85,274,817	\$5,578,387	93.86%	\$85,715,565	\$5,137,639	94.35%	\$56,835,668	\$5,137,639	91.71%
1992	\$87,417,000	\$6,781,783	92.80%	\$87,900,639	\$6,298,144	93.31%	\$53,974,960	\$6,298,144	89.55%
1993	\$101,620,765	\$8,627,665	92.17%	\$102,206,024	\$8,042,406	92.71%	\$64,002,465	\$8,042,406	88.84%
1994	\$117,619,058	\$14,023,882	89.35%	\$119,007,014	\$12,635,926	90.40%	\$78,746,862	\$12,635,926	86.17%
1995	\$129,496,520	\$13,732,840	90.41%	\$131,265,871	\$11,963,489	91.65%	\$82,970,840	\$11,963,489	87.40%
1996	\$159,746,807	\$12,226,042	92.89%	\$161,709,752	\$10,263,097	94.03%	\$98,492,806	\$10,263,097	90.56%
1997	\$190,287,927	\$14,968,125	92.71%	\$192,744,804	\$12,511,248	93.90%	\$108,143,224	\$12,511,248	89.63%
1998	\$228,150,782	\$14,201,662	94.14%	\$231,067,238	\$11,285,206	95.34%	\$118,961,927	\$11,285,206	91.34%
1999	\$289,400,736	\$17,971,174	94.15%	\$294,573,817	\$12,798,093	95.84%	\$148,475,055	\$12,798,093	92.06%
2000	\$341,861,145	\$23,188,939	93.65%	\$350,966,615	\$14,083,469	96.14%	\$180,748,296	\$14,083,469	92.77%
2001	\$286,069,825	\$17,845,533	94.13%	\$292,645,485	\$11,269,873	96.29%	\$145,440,441	\$11,269,873	92.81%
2002	\$246,785,645	\$17,596,158	93.34%	\$252,772,035	\$11,609,768	95.61%	\$125,930,823	\$11,609,768	91.56%

Table 2. World Market Capitalization and Short-Sales Restrictions

This table classifies the World Market Capitalization into countries where short sales are allowed and practiced, and otherwise. The interpretation of the third column is that, from year 1990 to year 2000, short sales were allowed in markets representing from 93.30% to 93.34%. The next three columns show the actual amount of the world market capitalization that is either shorthable or not. To calculate the numbers in these columns we have taken into account firms in countries where short sales are not allowed / not practiced, that list in markets where short sales are allowed and practiced, in particular the U.S. (NYSE and Nasdaq) and the U.K. (LSE). The table shows that, after accounting for ADRS, the percentage of the world market capitalization that is shorthable has increased from 93.31% in 1990, to 95.61% in 2002. Finally, the last two columns in the table display the market capitalization that is shorthable via ADRS in countries where short sales are not allowed / not practiced. The percentage of shorthable capitalization in these countries has increased from 7.13% in 1990, to 34.02 in 2002. Data are in \$Million.

YEAR		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
All Countries	Shortable	\$389,675	\$440,748	\$483,639	\$583,372	\$1,370,250	\$1,753,842	\$1,933,823	\$2,387,078	\$2,843,027	\$5,097,332	\$8,986,297	\$6,356,851	\$5,751,816
	Non-Shortable	\$951,740	\$1,032,916	\$1,048,765	\$1,783,360	\$3,863,569	\$4,489,613	\$6,611,884	\$8,114,827	\$9,870,042	\$12,701,590	\$13,967,672	\$11,176,709	\$11,509,492
	Ratio	29.05%	29.91%	31.56%	24.65%	26.18%	28.09%	22.63%	22.73%	22.36%	28.64%	39.15%	36.26%	33.32%
Argentina	Shortable	-	-	-	\$8,102	\$186,717	\$164,743	\$182,789	\$221,894	\$268,167	\$228,185	\$246,828	\$146,132	\$45,140
	Non-Shortable	-	-	-	\$229,947	\$292,278	\$217,267	\$289,420	\$415,700	\$331,643	\$287,244	\$156,111	\$168,526	\$77,630
	Ratio	-	-	-	3.40%	38.98%	43.13%	38.71%	34.80%	44.71%	44.27%	61.26%	46.44%	36.77%
Brazil	Shortable	-	-	-	-	-	-	-	-	\$23,855	\$96,710	\$184,570	\$130,890	\$87,970
	Non-Shortable	-	-	-	-	-	-	-	-	\$1,686,104	\$1,554,937	\$2,238,660	\$1,858,801	\$1,518,609
	Ratio	-	-	-	-	-	-	-	-	1.40%	5.86%	7.62%	6.58%	5.48%
Colombia	Shortable	-	-	-	-	-	\$35,863	\$45,166	\$43,667	\$17,502	\$1,769	\$1,889	\$2,163	\$2,928
	Non-Shortable	-	-	-	-	-	\$211,522	\$169,671	\$200,201	\$101,325	\$62,724	\$62,239	\$62,907	\$69,916
	Ratio	-	-	-	-	-	14.50%	21.02%	17.91%	14.73%	2.09%	2.95%	3.32%	4.02%
Chile	Shortable	-	-	-	\$31,812	\$54,300	\$55,634	\$61,055	\$96,486	\$96,571	\$99,968	\$100,803	\$91,397	\$95,168
	Non-Shortable	-	-	-	\$261,107	\$434,110	\$562,342	\$507,724	\$665,351	\$440,238	\$418,838	\$493,142	\$482,722	\$440,707
	Ratio	-	-	-	10.86%	11.13%	9.00%	10.73%	14.58%	17.99%	19.27%	16.97%	15.92%	17.76%
Cayman Islands	Shortable	\$562	\$1,818	\$1,496	\$2,658	\$5,930	\$6,486	\$7,175	\$7,868	\$2,903	-	-	-	-
	Non-Shortable	\$5,577	\$8,067	\$14,062	\$10,138	\$17,037	\$10,169	\$5,952	\$5,116	\$44	-	-	-	-
	Ratio	9.15%	18.41%	9.60%	20.77%	25.82%	38.94%	50.79%	49.22%	98.50%	-	-	-	-
Spain	Shortable	\$310,024	\$353,318	\$387,131	\$405,268	\$477,488	\$484,322	\$621,684	\$875,357	\$1,297,575	\$1,473,146	\$2,044,198	\$2,106,732	\$1,692,165
	Non-Shortable	\$684,420	\$757,529	\$763,807	\$711,566	\$875,379	\$965,831	\$1,141,715	\$1,470,572	\$2,199,301	\$2,253,268	\$2,054,136	\$2,155,941	\$2,226,269
	Ratio	31.16%	31.81%	33.64%	36.29%	35.29%	33.40%	35.29%	37.31%	37.11%	39.53%	49.88%	49.42%	43.18%
Finland	Shortable	\$819	\$511	\$467	\$734	\$45,258	\$122,383	\$103,472	\$186,535	\$364,495	\$1,297,713	\$2,826,325	\$1,588,189	\$1,167,712
	Non-Shortable	\$142,586	\$130,662	\$95,823	\$166,029	\$263,571	\$337,396	\$389,717	\$541,385	\$713,836	\$835,967	\$991,775	\$586,951	\$598,018
	Ratio	0.57%	0.39%	0.48%	0.44%	14.65%	26.62%	20.98%	25.63%	33.80%	60.82%	74.02%	73.02%	66.13%
Greece	Shortable	-	-	-	-	-	-	-	-	\$13,615	\$197,142	\$202,197	\$114,140	\$128,667
	Non-Shortable	-	-	-	-	-	-	-	-	\$489,461	\$866,698	\$873,853	\$643,883	\$565,002
	Ratio	-	-	-	-	-	-	-	-	2.71%	18.53%	18.79%	15.06%	18.55%
Hungary	Shortable	-	-	-	-	-	-	\$2,586	\$10,532	\$9,838	\$7,369	\$9,430	\$6,626	\$7,173
	Non-Shortable	-	-	-	-	-	-	\$33,843	\$79,494	\$152,478	\$156,872	\$164,099	\$109,973	\$130,346
	Ratio	-	-	-	-	-	-	7.10%	11.70%	6.06%	4.49%	5.43%	5.68%	5.22%
India	Shortable	-	-	-	-	\$26,024	\$48,340	\$142,785	\$133,765	\$86,774	\$76,611	\$101,588	\$67,505	\$68,036
	Non-Shortable	-	-	-	-	\$274,192	\$363,790	\$655,768	\$594,241	\$106,914	\$272,906	\$271,896	\$168,830	\$226,962
	Ratio	-	-	-	-	8.67%	11.73%	20.15%	18.37%	44.80%	21.92%	27.20%	28.56%	23.06%
Indonesia	Shortable	-	-	-	-	-	-	-	-	-	\$40,354	\$392,970	\$233,278	\$206,508
	Non-Shortable	-	-	-	-	-	-	-	-	-	\$1,094,573	\$1,178,646	\$891,432	\$906,528
	Ratio	-	-	-	-	-	-	-	-	-	3.56%	25.00%	20.74%	18.55%
Israel	Shortable	-	-	-	\$21,097	\$21,466	\$37,833	\$53,118	\$69,578	\$65,332	\$75,718	\$135,194	\$131,037	\$129,476
	Non-Shortable	-	-	-	\$189,225	\$185,480	\$146,897	\$153,554	\$197,921	\$231,544	\$284,165	\$399,424	\$338,045	\$294,207
	Ratio	-	-	-	10.03%	10.37%	20.48%	25.70%	26.01%	22.01%	21.04%	25.29%	27.93%	30.56%
South Korea	Shortable	-	-	-	-	\$349,361	\$558,108	\$548,180	\$396,382	\$241,411	\$930,975	\$1,441,443	\$922,152	\$1,258,987
	Non-Shortable	-	-	-	-	\$830,217	\$769,666	\$700,858	\$539,300	\$289,973	\$950,741	\$933,798	\$832,403	\$1,345,253
	Ratio	-	-	-	-	29.62%	42.04%	43.89%	42.36%	45.43%	48.47%	60.69%	52.56%	48.34%
Norway	Shortable	\$78,270	\$68,415	\$59,606	\$63,563	\$91,525	\$112,103	-	-	-	-	-	-	-
	Non-Shortable	\$119,157	\$110,312	\$97,925	\$113,857	\$159,788	\$239,448	-	-	-	-	-	-	-
	Ratio	39.65%	38.28%	37.84%	35.83%	36.42%	31.89%	-	-	-	-	-	-	-
New Zealand	Shortable	-	\$16,686	\$34,939	\$50,138	\$70,597	\$87,157	\$103,562	\$111,305	\$95,460	\$94,648	\$72,922	\$48,311	\$51,504
	Non-Shortable	-	\$26,356	\$77,128	\$101,491	\$153,427	\$181,096	\$253,383	\$305,004	\$232,307	\$227,568	\$194,003	\$180,291	\$192,140
	Ratio	-	38.77%	31.18%	33.07%	31.51%	32.49%	29.01%	26.74%	29.12%	29.37%	27.32%	21.13%	21.14%
Peru	Shortable	-	-	-	-	\$1,652	\$12,919	\$14,943	\$11,620	\$9,572	\$6,801	\$7,359	\$8,274	
	Non-Shortable	-	-	-	-	\$13,035	\$94,907	\$107,808	\$81,683	\$65,731	\$74,655	\$62,686	\$81,174	
	Ratio	-	-	-	-	11.25%	11.98%	12.17%	12.45%	12.71%	12.71%	10.51%	9.25%	
Philippines	Shortable	-	-	-	\$41,494	\$39,159	\$37,029	\$37,067	\$33,325	\$36,970	\$34,882	\$25,515	\$15,270	
	Non-Shortable	-	-	-	\$378,090	\$471,151	\$624,742	\$554,346	\$278,675	\$375,392	\$257,525	\$208,542	\$209,416	
	Ratio	-	-	-	9.89%	7.67%	5.60%	6.27%	10.68%	8.97%	11.93%	10.90%	6.80%	
Poland	Shortable	-	-	-	-	-	-	\$9,845	\$110,092	\$140,427	\$91,909	\$91,909	\$69,905	
	Non-Shortable	-	-	-	-	-	-	\$86,116	\$141,159	\$174,473	\$190,797	\$238,465		
	Ratio	-	-	-	-	-	-	10.26%	43.82%	44.59%	32.51%	22.67%		
Taiwan	Shortable	-	-	-	-	-	-	\$12,302	\$180,229	\$197,619	\$315,563	\$1,037,372	\$640,878	\$714,392
	Non-Shortable	-	-	-	-	-	-	\$1,679,631	\$2,365,524	\$1,957,917	\$2,326,234	\$2,518,254	\$1,788,213	\$1,997,479
	Ratio	-	-	-	-	-	-	0.73%	7.08%	9.17%	11.95%	28.18%	26.38%	26.34%
Turkey	Shortable	-	-	-	-	-	-	\$1,469	\$7,121	\$4,829	\$8,465	\$2,638	\$2,541	
	Non-Shortable	-	-	-	-	-	-	\$169,865	\$490,482	\$506,571	\$930,986	\$445,766	\$391,371	
	Ratio	-	-	-	-	-	-	0.86%	1.43%	0.94%	0.69%	0.59%	0.65%	

Table 3. World Market Capitalization and Short-Sales Restrictions. Countries where Short Sales are Not Allowed / Not Practiced

This table classifies the World Market capitalization into shortable and non-shortable, for countries where short sales are not allowed / not practiced. To calculate the numbers in these columns we have taken into account firms in countries where short sales are not allowed / not practiced, that list in markets where short sales are allowed and practiced, in particular the U.S. (NYSE and Nasdaq) and the U.K. (LSE). The table shows that, after accounting for ADRS, the percentage of the market capitalization that is shortable has increased from 29% in 1990, to 33% in 2002. Data are in \$Million

	Total Sample		Countries with Regulatory Change	
	Outflows	Inflows	Outflows	Inflows
Short Sales Dummy	-9457.3 ***	-3.51	-4508.1	-1.44
GDP - Total	2E-08 ***	3.15	4E-08 ***	3.54
GDP per capita	0.934	1.38	0.890 *	1.77
Financial Risk Rating	-1349.4 ***	-4.90	-848.0 ***	-3.34
Economic Risk Rating	592.9 **	2.52	346.2	1.62
Political Risk Rating	583.9 ***	2.92	593.8 ***	3.29
Intercept	-12653.7	-0.85	-44867.9 ***	-3.72
Number of Observations	459		462	
Adjusted R-squared	0.6595		0.6916	
Year - Fixed Effects	YES		YES	
Country - Fixed Effects	YES		YES	
			39	39
			0.6228	0.382
			YES	YES
			YES	YES

*, **, *** denotes significant at the 10%, 5%, 1% levels or better, respectively

Table 4. Foreign Direct Investment

Regression of outflows and inflows of Foreign Direct Investment on Short Sales dummy. Data on FDI is obtained from the United Nations Conference on Trade and Development, Division on Investment, Technology and Enterprise Development. GDP data is from the World Bank Development Indicators. FDI and GDP are in \$ million. The financial risk variable is a composite index of several macroeconomic ratios: the percentage of foreign debt to GDP, foreign debt service as a percentage of exports of goods and services; current account as a percentage of exports of goods and services; net liquidity as months of import cover; and exchange rate stability. Financial risk ratings range from a high of 50 (least risk) to a low of 0 (highest risk). The political risk variable is an average of the following indicators: government stability; socioeconomic conditions; investment profile; internal conflict; external conflict; corruption; military in politics; religion in politics; law and order; ethnic tensions; democratic accountability; and bureaucracy quality. Risk ratings range from a high of 100 (least risk) to a low of 0 (highest risk). The economic risk index is the average of the component factors of GDP per head of population, real annual GDP growth, annual inflation rate, budget balance as a percentage of GDP, and current account balance as a percentage of GDP. Risk ratings range from a high of 50 (least risk) to a low of 0 (highest risk). The first set of regressions include all 56 countries in our sample. The second set of regressions include only countries with regulatory changes (Malaysia, Hong Kong, Thailand, Norway, and Sweden). We calculate robust standard errors.

Figures:

Figure 1: Indexes of total return for three capital-weighted portfolios: A portfolio of non-shortable world equities, labeled “NON-SHORTABLE-ALL”. A portfolio of shortable world equities labeled “SHORTABLE-ALL” and a portfolio of non-U.S. shortable equities labeled “SHORTABLE-NON US”.

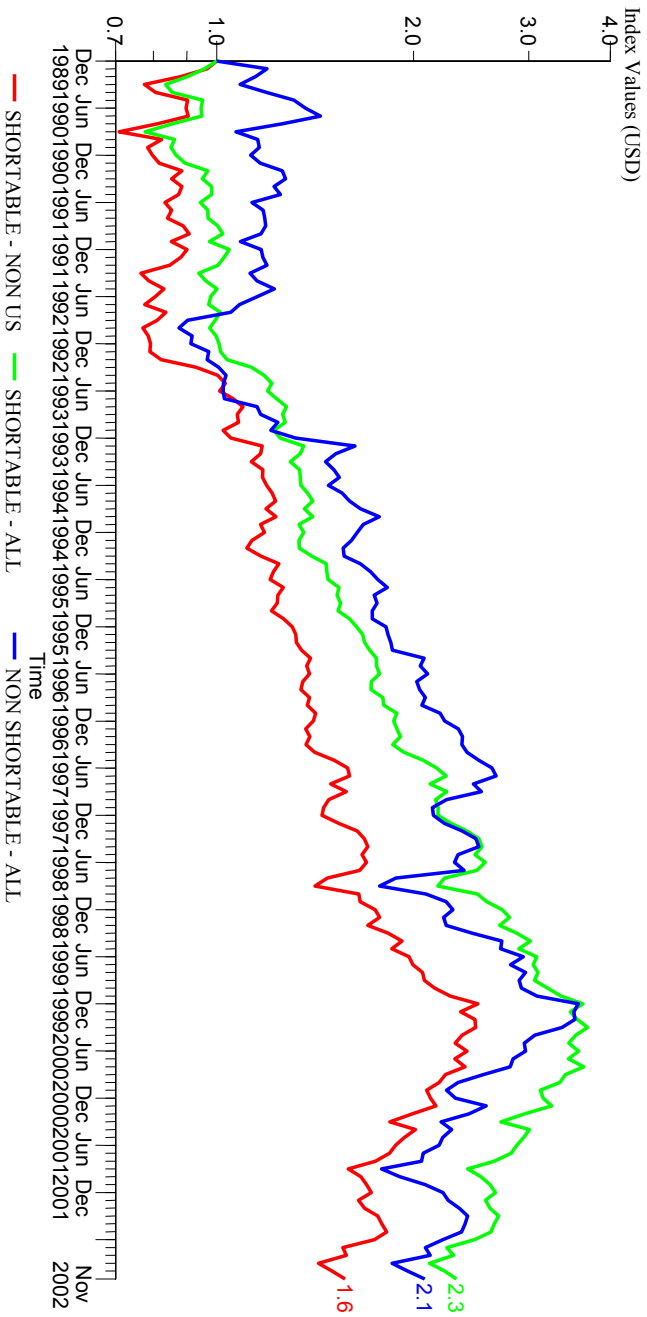


Figure 2: Explanatory power of the non-shortable and shortable portfolios. The figure reports the R-square from a rolling 12 month regression of the MSCI World Index returns on the shortable and non-shortable portfolio returns. The figure also includes the implied long-only portfolio weight from the regression, for which the coefficients are constrained to sum to one.

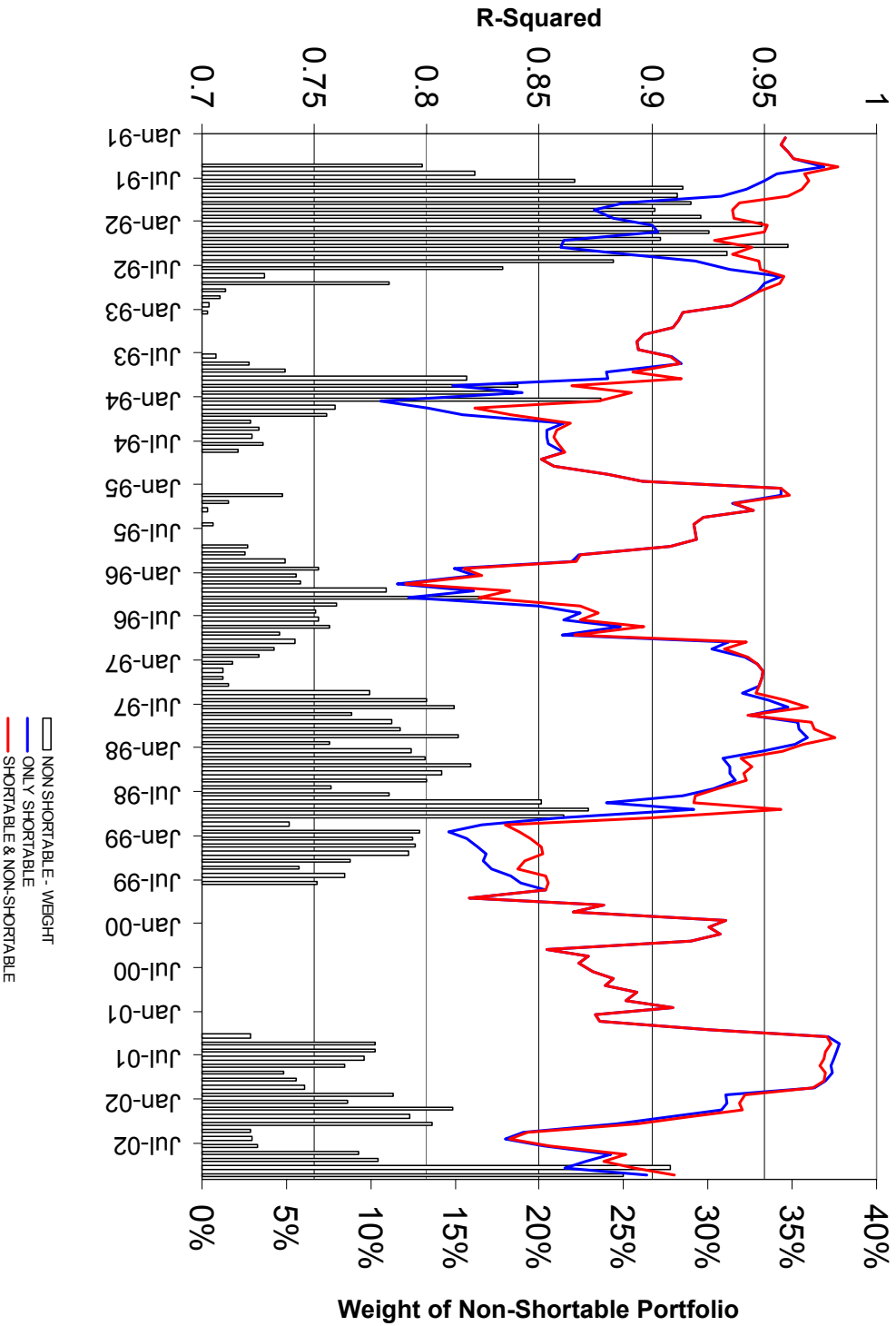


Figure 3: Estimated portfolio weights for a regression of MSCI world index returns on the MSCI U.S. total return index, and the shortable and non-shortable portions of Argentina's stock market.

