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New Evidence on the Wealth Transfer during the Argentine Crisis

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Abstract: In this study, we investigate the wealth preservation hypothesis and revisit the theory of wealth transfer from Argentina to the United States during the Argentine crisis. We show that the boom experienced by the Argentine stock market is explained by both wealth preservation through top non-ADR stocks and by wealth transfer through ADR stocks. Argentine investors without access to trading abroad preserved wealth by converting their bank deposits into the most liquid ADR and non-ADR stocks. An investment in a portfolio of less liquid ADRs resulted in a wealth loss, unless used as a vehicle to transfer funds abroad.

1. Introduction

During the early 2000s, Argentina experienced a catastrophic crisis that resulted in the collapse of its currency board system, a system that was able to withstand the effect of several other crises during the 1990s such as the Mexican crisis, Tequila crisis, and the devaluation of the Brazilian real. Many of the financial crises in emerging economies during the 1990s and the early 2000s (Mexico in 1994-95, East Asia in 1997-98, Turkey in 2000-01) were preceded by a significant increase in capital flow and a pegged nominal exchange rate (Bustelo, 2004). However, the Argentine crisis is unique among these emerging market crises because it is the only crisis where the economic and social collapse was contemporaneous with a stock market boom.

The rise in the Argentine stock market during the crisis has been attributed to a wealth transfer from Argentina into the United States through American Depositary Receipts (ADRs) (Auguste, Dominguez, Kamil, and Tesar 2003 and Melvin 2003). These American Depository Receipts are dollar-denominated, negotiable certificates representing a pre-specified amount of a foreign company's publicly traded equity, held on deposit in the issuer's domestic market. The depository banks pass all dividends and payments related to the underlying shares, converted into U.S. dollars, to the holders of the ADRs. The shift of wealth out of Argentina into the United States led to a premium of more than 40 percent above the value of shares in New York for the transactions with the shares of Argentines stocks. Yeyati, Schmukler, and Van Horen (2004) attribute the stock market boom to the deposit run and the cost willingly paid by depositors to get their money out of the banking system, although not necessarily out of the country.

In this paper, we investigate the theory of wealth preservation through different investment vehicles as well as revisit the wealth transfer hypothesis by investigating the premium for a portfolio of ADR stocks and an alternative portfolio of non-ADR stocks traded in the Argentine stock market. The analysis is conducted for a period of at least one year prior to the suspension

of the bank deposits convertibility and the implementation of extensive capital controls, called the *corralito*, in December 2001. We complement the literature on the Argentine stock market boom during the crisis by arguing that the wealth transfer from Argentina into the United States was probably limited to transactions of more liquid ADRs in Argentina. We argue that while the price increase was generalized to all stocks, the differential increase in liquid ADR and less liquid ADR stocks supports the hypothesis that large investors used the most liquid ADRs as a preferred vehicle for the wealth transfer. However, individual investors would have been better off when choosing the less liquid ADRs to transfer wealth abroad. We also find support for the hypothesis that the stock market boom reflected the price paid by investors to cash out their inconvertible bank deposits in order to avoid the devaluation, reprogramming, and confiscation risks. The rest of the paper is organized as follows. Section II describes the institutional background. Section III reviews the literature on the Argentine crisis. Section IV presents our hypothesis and model. Section V details the ADR and alternative non-ADR portfolio construction. Finally, Section VI presents our results and section VII concludes.

2. Institutional background

During the 1980s, Argentina experienced significant periods of inflation mainly due to the instability of the peso. To counteract these problems the Argentine government enacted several policies throughout the 1980s to attempt to stabilize their currency. The policies enacted came in the form of three separate programs designed to curb the inflation. The first of these programs, the Austral Program (June, 1985), attempted to reduce inflation by attacking three main areas: lowering the fiscal deficit, a restructuring of previously made debt contracts, and the fixing of prices, wages and the prices of public enterprises. The second of these programs was the Primavera Program. This program again reduced the deficit by curbing spending and also severely contracted monetary policy. The final program was the Bonex Program, which fixed the exchange rate and set the exchange rate as the nominal anchor.[1]

The success of these programs proved to be lackluster and managed to only temporarily affect inflation. The Argentine government, in an attempt to stave off the dramatic inflation that plagued the country throughout the end of the 1980s underwent major changes to its banking and monetary system. Beginning in April of 1991, a convertibility program was initiated by the Economy minister, Domingo Cavallo, that would attempt to once and for all stabilize the Argentine Peso. One of the most significant changes made to stabilize the Argentine Peso was the adoption of a currency board as a means of establishing an alternative exchange rate regime. Through this convertibility plan, the Argentine currency system essentially shifted to a system based on establishing a monetary base that is completely backed by international currency, the majority of which was the U.S. dollar (USD). This new system witnessed immediate success and dropped inflation from a rate of 600% in the eighties to international levels in the nineties (2.7%).[2]

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[1]Fellinger Jusué, Erica, and Tomás Mancha Navarro. *Stabilization Policies in Argentina: An Analysis from the Perspective of Inflation Uncertainty*. *Instituto Universitario De Análisis Económico Y Social*. Universidad De Alcalá, Apr. 2008. Web. 14 Sept. 2010.

[2]Argentina. Ministry of Economics and Public Works and Services.*The Argentine Currency Board*. By Miguel A. Kiguel. Online.

Though many hailed the convertibility plan, others documented that it contained several vital flaws. The necessary backing in foreign currency was initially provided by Argentina's reserves, a resource which was soon depleted. The next source of capital was foreign investment, which the Argentine government heavily relied on. However this source of financing slowed dramatically following many emerging market crises during the 1990s (including the 1994-5 Tequila crisis, the 1997/1998 Asian/Russian crisis and the 1999 devaluation of the Brazilian real). Without this source of financing the Argentine government looked to the IMF for funding. In 2000, the IMF responded by giving Argentina a $15 billion *emergency* loan (Setser 4). With this loan came unusually lenient consolidation conditions. As time passed it became obvious that the Argentine government would have some difficulty with even those lenient conditions.

As a result of the massive borrowing, Argentina's debt to GDP ratio rapidly increased from 2000 to 2001 (51% to 62%) (Setser 4). As the Argentine economy began to slump in June 2001 they underwent a $30 billion government debt swap with the IMF, which deferred near-term principal and some interest payments (Setser 5). Even with these measures, in the summer of 2001 a zero deficit budget was announced. The announcement led to a deposit run in August 2001. In response to the bank run, a strict withdrawal policy was put in place on December 3rd 2001. This system of capital controls, named the *corralito*, limited withdrawals to 250 pesos (dollars) per week per account and also placed a $1000 limit in cash taken abroad. Even with the *corralito* in place, larger purchases could still be made through checks or debit cards and bank deposits could be used in Argentine stock purchases above the $1000 limit.[3] With the economic future of Argentina still uncertain, in December 2001, the De La Rua government resigned. After several interim presidents, Eduardo Duhalde became president and abolished the convertibility plan. Beginning in January 2002, the peso was officially devalued. The collapse of the convertibility plan allowed for Argentina to slowly begin recovering and improving its economy.

3. Literature review

The origins of the Argentine crisis and the remedies used by the authorities have been documented by an impressive number of research studies. While the start of the crisis can be traced to ineffective macroeconomic policies adopted by Argentine authorities after the Second World War, the empirical evidence focuses on the decade prior to the crisis, a decade governed by the convertibility model. The implementation of the model had an initial positive impact by achieving stability after two hyperinflation processes in 1989 and 1990. The fixed exchange rate was adopted at the same time with a bi-monetary system that allowed the government to assume internal debt in dollars in exchange of pesos. As a result of the fact that liquidity could not be provided by internally generated funds, the restrictions of the model were overcome by issuing bonds.

Hausmann and Velasco (2002) identify three major views on the Argentine crisis. According to the first view, "the self-fulfilling pessimism paradigm," pessimism led to high interest rates,

[3] Auguste, Sebastian, Kathryn M.E. Dominguez, Herman Kamil, and Linda L. Tesar. "Cross-border Trading as a Mechanism for Implicit Capital flight: ADRs and the Argentine Crisis." *Journal of Monetary Economics* 53 (2006): 1259-295. *ScienceDirect*. Web. 28 Oct. 2010.

depressed growth, and a weakening fiscal position. The IMF recommended a strengthening of confidence through fiscal consolidation, which was expected to stimulate stronger public finances, lower interest rates and a recovery of economic activity. The second view supports the argument of "irresponsible fiscal management". However, the argument finds weak support on the fact that primary government expenditure, as a percentage of GDP, remained constant in 1993-2001. Finally, the third view supports the argument that a rigid exchange rate regime led to overvaluation, which had a devastating effect on the profitability of the export sector.

While many of the Argentine crisis episodes have generated divergent points of view, one of the most puzzling periods during the crisis was the stock market boom. Melvin (2002) attributes this boom to the purchase in Argentina of shares cross-listed in the U.S. capital markets and selling the ADR shares in the U.S markets. This "loophole" as described by Auguste, Dominguez, Kamil, and Tesar (2003) allowed investors to use illiquid bank deposits restricted by the *corralito* to purchase Argentine stocks. The Melvin's hypothesis posits that capital controls avoidance resulted in a wealth transfer from Argentina to the U.S. The main reason for this practice of conversion of shares was the desire to reduce peso currency holdings and avoid capital controls.

Melvin (2002) uses the Datastream ADR prices for the year 2001 and the first quarter of 2002 to show that the ADR premium was not significant until December 1st 2001. However, the *corralito* resulted in a significant ADR premium after December 1st 2001 that lasted until March 25th 2002 when the conversion of ADRs was prohibited. Melvin advances a model to explain the deviation of prices between Argentine shares and ADR shares traded in New York. This model asserts that, during the *corralito*, Argentine ADR prices reflected two main components. The first was the present value of all future dividend payments. The second term is the discounted cash flows associated with positive returns expected from U.S. investment opportunities relative to the losses anticipated from investments in Argentina. [4]

Auguste, Dominguez, Kamil, and Tesar (2003) examine multiple factors affecting arbitrage as well as the transfer of wealth during the crisis. The first effect is the liquidity value of shares and the impact that the *corralito* had on prices of all Argentine shares. This effect is associated with the value of the transformation of deposits into stocks that might otherwise be expropriated by the government or lost in a full-scale bank run. The second effect was the value of capital controls circumvention through the use of cross-listed shares. ADRs carry an additional premium due to their ability to move funds out of Argentina and this premium lasts until investors are indifferent between holding funds in Argentina or moving them abroad. Since ADR stocks issue dollar-denominated dividends paid out at the official exchange rate, the valuation of the local shares may be altered due to expected path of the exchange rate. Also since investors absorb profits in dollars as opposed to pesos, the expected profit is also affected by ADR conversion.

Yeyati, Schumukler, and Van Horen (2003) reevaluate the wealth transfer hypothesis and argue that the stock market boom reflected the costs that depositors were willing to incur to get their money out of the inconvertible Argentine banking system. The establishment of the *corralito*, the banking deposit controls that limited withdrawals, is identified as the main reason

[4] Melvin (2002)

behind stock market prices increase. A different perspective on the increase in stock market price is provided by Gavrilidis, Kallinterakis, and Micciullo (2007), who provides support for the argument of herd behavior during the Argentine crisis. The findings of the study indicate that there was significant statistical significance for herd behavior for the crisis period of 2000-2006 as well as both sub-periods. This behavior seemed to be generated in two "substantial 'cycles' during the 2000-2006 period". The first of these began in August of 2000 and peaked during May of 2002 and ended later that year. The second period began after the first cycle and concluded toward the end of 2006.

Pasquariello (2005) examines efficiency of emerging markets by looking at the emerging economies and the instability of these markets and their affect on pricing relationships. An analysis of ADRs should yield that the ADR prices should be a perfect substitute for the underlying value of the equity in the home market. Pasquariello's analysis is done by examining the relationship between r^{m}_{it}, which is the dollar return for shares of company i in country m at time t, and r^{US}_{it} is the dollar return for the corresponding depositary receipt at time t. The null hypothesis of perfect substitutability between the two securities implies that, in relationship

$$r^{US}_{it} = a_i + b_i r^{m}_{it} + \eta^{\mathrm{US}}_{\mathrm{it}},$$

both equal $a_i = 0$ and $b_i = 1$. Pasquariello argues that the ADR market is an ideal environment to test whether or not these prices vary during times of crises in these emerging economies. Along with the Argentine crisis period, Pasquariello examines as part of his analysis 19 other emerging markets.

4. Hypotheses and the model

We build upon previous empirical evidence and argue that after the *corralito*, different groups of investors had the option of preserving wealth by using different investment vehicles.

To examine our theory of wealth preservation we begin by assuming that those investors who transferred their shares abroad did so to preserve their wealth in stable currencies, the most likely being the USD since it had long been the currency that the peso had been pegged to. We conduct our analysis to reflect the investment opportunities of two separate groups, those investors who sought to transfer their investments outside Argentina, and those who chose or were not able to transfer their funds. Examination of different groups of investors posits that different vehicles may have been more useful for these different groups. We analyze the effect of wealth preservation through different investment vehicles mainly liquids ADRs [top 5 ADR portfolio], less liquid ADRs [matched ADR portfolio], and the most liquid non-ADR stocks [top 5 ADR stocks].

Hypothesis 1
We hypothesize that the change in the level of the top 5 non-ADR, top 5 ADR, and matched ADR portfolios reflects a premium for liquidity (transfer of funds outside of the banking sector).

Hypothesis 2
In addition, if ADR stocks allowed investors to migrate their stocks to New York then the level of the top 5 ADR and matched ADR portfolio should also reflect the additional premium related to investment opportunities in the U.S.

Model:

$$P_t = E_t \sum_{j=1}^{\infty} \frac{D_{t+j}}{\prod_{i=1}^{j}(1+r_{t+i}+rp_{t+i}^{D})} \quad (1)$$

where E is the expectation operator, r is the risk-free rate of interest, rp^{D} is the risk premium used to discount future dividends, and D represents dividends

$$P_t = E_t \sum_{j=1}^{\infty} \left\{ \frac{D_{t+j}}{\prod_{i=1}^{j}(1+r_{t+i}+rp_{t+i}^{D})} + \frac{B_{t+j}}{\prod_{i=1}^{j}(1+r_{t+i}+rp_{t+i}^{B})} + \frac{C_{t+j}}{\prod_{i=1}^{j}(1+r_{t+i}+rp_{t+i}^{C})} \right\} \quad (2)$$

where rp^{B} is the risk premium used for discounting cash flows associated with bank deposit controls avoidance. *B* represents those cash flows, which may be thought of as the positive returns expected from investment opportunities relative to the losses anticipated from investments with funds tied to the banking sector. Thus, for a *B=0* we have the equivalent to Melvin's model.

The rp^{C} is the risk premium used for discounting cash flows associated with capital controls avoidance. *C* represents those cash flows, which may be thought of as the positive returns expected from U.S. investment opportunities relative to the losses anticipated from investments in Argentina. *C=0* for non-ADR stocks.

5. Data and portfolio construction

5.1 Data

The data used in this research is comprised of daily closing prices for ADR and non-ADR stocks during the period of August 1st 2000 through December 31st 2002. This time period has been chosen as an extension of the research time period examined by Yeyati, Schumukler, and Van Horen (2003). These historical prices were obtained from the Bolsa de Comercio de Buenos Aires Bolsar website.[5] Our top 5 ADR portfolio includes all but all but one stock (Perez Companac) used by Yeyati et al. (2003). In addition, the most recent trading data has been used for periods of no trading data.

In addition to the individual stock data found on the Bolsa de Comercio de Buenos Aires website, supplementary data on indices such as the Merval, Burcap, and Argentine Standard were taken from the Ministry of Economy of Argentina and the MSCI databases. Figure 1 illustrates the path of the Merval, Burcap, and Argentina MSCI indices from January 2001 until

[5] www.bolsar.com

March 2002. Additional data from the Ministry of Economy databases such as exchange rates were also used. The ADR data was collected from the Bank of New York Mellon ADR directory as well as Google Finance and Yahoo Finance.

5.2 Methodology and Portfolio Construction

Examination of the Merval, Burcap, and Argentina Standard MSCI shows that these steadily fell throughout 2001 from their high in January 2001 to their low in November 2001 as shown in Figure 1. However, Figure 2 illustrates that immediately after the government announced the financial market restrictions the stock market began to rise. During the stock market boom, there were 25 Argentine firms listed as ADRs in the United States. Of these stocks 11 were available only to institutional investors, three of these stocks were listed on the NASDAQ and 11 listed on the New York Stock Exchange (NYSE). One of the portfolios used to test our main hypothesis is that of five non-ADR stocks with the highest trading volume during the August-September 2000 period. The stocks that comprise this portfolio are: Siderar (ERAR), Acindar (ACIN), Molinos Rio de la Plata (MOLI), Banco de Galicia y Buenos Aires (GALI), and Banco Macro (BMA). The data used in these data sets is available on the Bolsa de Comercio de Buenos Aires website.[6] As opposed to the Yeyati et al. (2003), we choose to construct the three portfolios based on the trading volume during a period previous to the 2001 trading year. For dates where no trading data was available, the previous trading sessions data was used. The weight of the stock in the top 5 non-ADR portfolio is

$$W_j = \frac{V_j}{\sum_{j=1}^{5} V_j} \tag{4}$$

where V_j is the average trading volume of the stock j during the August-September 2000 period. The level of the portfolio at time t is as follows:

$$NON\ ADR\ Portf_t = \sum_{j=1}^{5} w_j P_{jt} \tag{5}$$

The portfolio level was adjusted so that it equaled 100 on November 30th 2001.

Next, we constructed a portfolio of the top 5 ADR stocks based on average volume using the same methodology following the research of Yeyati et al. Highly liquid ADR stocks are defined as the five stocks with the highest average trading volume during the time period of August 2000 – September 2000. These stocks are: Telecom Argentina (TECO2), Grupo Financiero de Galicia (GGAL), YPF (YPFD), Banco Frances (FRAN), and Inversiones y Representaciones (IRSA). These stocks are listed in Table 3.

In addition, we created a third portfolio of 5 less liquid ADR stocks with a market capitalization similar to that of the 5 non-ADR stocks. To create these two similar portfolios, the 12 ADR stocks that were traded during the January 2000 through December 2002 time period were filtered based on market cap. The 5 ADRs that were most similar to the 5 stocks used in the non-ADR portfolio were used in this third portfolio. The resulting portfolio, listed in Table 3,

[6] www.bolsar.com

consists of the following stocks: Alto Palermo S.A. (APSA), Transportador del Gas del Sur (TGSU2), Telefonica de Argentina (TEAR2), Petrobras (PESA), and Cresud (CRES). These portfolios were also graphed with the portfolios' value in USD by dividing the prices by the daily exchange rate data found on the Ministry of Economy database. [7]

In order to test the two main hypotheses, we measure the average change in the portfolio value for the top 5 non-ADR stocks during the period of August 1st, 2000 and through December 31st, 2002 (see Figure 3). According to the wealth preservation hypothesis the change in the non-ADR portfolio value after the *corralito* should reflect the premium [$B \neq 0$] related to the ability to remove funds out of the banking system during a period when withdrawals where limited. The change in the matched ADR portfolio value should reflect the additional premium related to investors ability to transfer wealth outside of Argentina [$C \neq 0$].

In order to examine the wealth transfer hypothesis, the portfolios were compared to their value in USD during the period of August 1st, 2000 through December 31st, 2002 since investors would be most concerned with preserving their wealth in USD. This data is shown in Figure 4. In addition, the overall portfolios were compared to each other in USD to examine preference in the different investment vehicles.

The wealth transfer hypothesis requires the analysis of the ADR premium defined as the difference between the ADR portfolios in Argentina and New York. The prices of the Argentine shares were converted into dollars using the daily exchange rates found on the Ministry of Economy database. These prices were then multiplied by the ratio of shares that comprise the ADR stocks traded in New York. This data was found on the Bank of New York (BoNY) ADR database. [8] This gave us the comparable shares of Argentine ADR stocks to the ADR shares in New York. The premium is computed by subtracting the price of the composed portfolio of ADR stocks in New York from the price of the composed portfolio of ADR stocks in Argentina. The resulting difference showed the premium or discount associated with investment in these stocks. To show these as a percentage of the price, we divided the premium price by the overall portfolio of ADR stocks in Argentina.

6. Results

Figure 3 shows the price path for the three portfolios during the August 2000 through December 2002 period. Prior to the *corralito*, the top 5 non-ADR portfolio and the matched ADR portfolio followed a similar trend for the entire year 2001 period. There is a significant decrease in the value in USD of the top 5 ADR portfolio until October 2001, when the values of the three portfolios were similar. For the two-month period prior to the *corralito*, the three portfolios maintained a similar value. The stock market boom, documented by previous empirical studies is mainly reflected by a significant change in portfolio value for the top 5 ADR and the top 5 non-ADR portfolios. However, the trend reflected in USD in Figure 4 for the three portfolios indicates that the stock boom translates into a significant premium only for the top 5 ADR portfolio.

[7] Ministry of Economy www.mecon.gov.ar
[8] Bank of New York http://www.adrbnymellon.com/dr_directory.jsp

The three portfolios provided different investment vehicles, however, the top 5 non-ADR could not be used for the transfer of wealth [$C=0$]. This means that any significant change in the value of the top 5 non-ADR portfolio after the *corralito*, was mainly attributed to the bank deposits convertibility premium [$B\neq0$]. Figure 3 reflects a significant change in the value of the top 5 non-ADR portfolio, however, as reflected by the trend in the USD in Figure 4, the top 5 non-ADR provided investors with a means of preserving wealth and resulted in no significant wealth gain over a one year investment horizon.

The top 5 ADR and matched ADR portfolios also provided investors with a means of converting their illiquid bank deposits into cash. Figure 4 shows the change in value of the top 5 ADR portfolio. We notice that the convertibility into ADR stocks was extremely time sensitive. Those investors who immediately invested in the top 5 ADR stocks at the announcement of the *corralito* (December 3rd 2001) not only had the ability to preserve their wealth but actually gained wealth. If investors purchased shares in early December and sought liquidity in Argentina within a one-month period after the *corralito*, then they had the ability to gain a large amount of wealth due to the appreciation of these stocks. However, an investor who purchased the most liquid ADR shares during the very beginning of December and held the shares over a one-year investment horizon only maintained or slightly gained wealth (Figure 4). Finally, those investors that attempted to gain liquidity by converting deposits into the most liquid stocks in early 2002 likely lost wealth due to purchasing these shares at the peak of the stock market boom.

In order to investigate the wealth transfer hypothesis, we analyze the ADR premium prior to the *corralito* and for the entire year 2002. We assume that the wealth transfer happened during the time period December 2001 through March 2002. Figure 5 demonstrates the overall premium that was paid for Argentine shares during the period of August 2000 through December 2002. The higher premium during December 2001 through March 2002 supports the wealth transfer hypothesis ($C\neq0$). After restrictions were placed on the conversion of Argentine shares to ADR shares in New York on March 26th, 2002 the premium associated with wealth transfer can no longer be considered and therefore $C=0$. There is, however, a continued premium for capital controls avoidance [$B\neq0$] and thus a liquidity premium. This premium paid for capital controls avoidance remained prevalent throughout the remainder of 2002.

The analysis of the ADR premium associated with the two portfolios (top 5 and matched ADR Portfolio) reveals that after the *corralito* the top 5 ADR portfolio was associated with a significant premium, while the matched ADR portfolio was associated with a discount. This means that the cost of transferring funds from Argentina to the United States through most liquid ADRs was significant (an average premium of 40% prior to the conversion restrictions imposed in March 2002 on top of the regular transaction costs). Although the less liquid ADRs provided investors with a vehicle for transferring wealth abroad, the lower trading volume for the matched ADR portfolio allowed wealth transfer only for small and/or medium investors. However, the discount for this portfolio provided partial compensation for the transaction costs.

In sum, the conversion of illiquid bank deposits into equities after the enforcement of the *corralito* in December 2001 provided investors with access to liquid funds. However, conversion time sensitivity and the choice of using certain equities had a significant impact on investors

attempt to preserve their wealth. Investors who sought to transform their illiquid bank deposits into pesos and chose the top 5 ADRs during the month of December were able to liquidate their equity positions at a higher selling price than the purchase price over a one month investment horizon. On the other hand, investors who transferred their wealth abroad incurred a transaction cost of 40% in addition to the regular transaction costs. Investors who chose to convert their illiquid deposits into less liquid ADRs where able to transform them into USD at a loss (40% average over the 2002 year period). However, less liquid ADRs were traded at a discount in Argentina relative to the ADR unit in New York. Therefore, investors who sought to transfer wealth abroad through less liquid ADRs were able to mitigate some of their losses due to the exchange rate. Finally, investors who converted their deposits using non-ADR stocks were able to preserve their wealth in USD with no loss at a later date.

7. Conclusion

Many previous studies on the Argentine crisis have primarily focused on the stock market boom and the use of ADR stocks as a means of wealth transfer from Argentina to the United States. While much of the emphasis on the Argentine crisis has focused on the wealth transfer hypothesis, an interesting tangent is in the study of the vehicles that were used not only for wealth transfer but also for wealth preservation in Argentina. We advance the argument that for different groups of investors, different investment vehicles provided means of wealth preservation.

The importance of non-ADR stocks is paramount in not just capital controls avoidance but also in a manner of wealth preservation. As our results indicate, during the Argentine crisis, investment in non-ADR resulted in a preservation of wealth in USD. For investors without the ability to convert shares into ADRs, this may have been a superior way to avoid capital controls while maintaining a level of wealth preservation above that of investment in ADRs. Investors with the ability to transfer shares abroad paid a premium for the most liquid ADRs and the ability to avoid capital controls avoidance. However, less liquid ADR stocks could be purchased in Argentina at a discount relative to the price of the ADR units in the United States. Our work complements the previous empirical evidence, such as Auguste, Dominguez, Kamil, and Tesar (2003), Melvin (2003) and Yeyati, Schumukler, and Van Horen (2003) and provides investors with a better understanding of different investment vehicles to preserve wealth during a crisis.

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Appendix 1

TIMELINE OF EVENTS

January 12, 2001–Argentina's continued poor economic performance prompts the IMF to augment the March 10, 2000 agreement by $7.0 billion as part of a $40 billion assistance package involving the Inter-American Development Bank, the World Bank, Spain, and private lenders. The agreement assumes GDP will grow at a rate of 2.5% in 2001 (versus actual decline of 5.0%).

March 19, 2001–Domingo Cavallo, Minister of Economy under Menem and architect of the currency board ten years earlier, replaces Ricardo Lopez Murphy, who resigns as Minister of Economy.

June 16-17, 2001–The de la Rua government announces a $29.5 billion voluntary debt restructuring in which short-term debt is exchanged for new debt with longer maturities and higher interest rates.

June 19, 2001–The peso exchange rate for merchandise trade is priced at a 50/50 dollar euro peg, effectively allowing a 7% devaluation for foreign trade in hopes of improving Argentina's international competitiveness. Many analysts raise concern over the effects on the credibility of the convertibility regime.

July 10, 2001–Cavallo announces a plan to balance budget, but the markets react negatively, expressing lack of confidence.

July 19, 2001–Unions call a nationwide strike to protest government austerity plan.

July 29, 2001–The Argentine Congress passes "Zero Deficit Law," requiring a balanced budget by the fourth quarter of 2001.

September 7, 2001–Based on Argentina's commitment to implement the "Zero Deficit Law" immediately, the IMF augments its March 10, 2000 agreement for a second time, increasing lending commitment by another $7.2 billion.

October, 2001–The use of provincial bonds as "scrip" to pay public salaries becomes more widespread as federal revenue transfers decline.

October 14, 2001–The opposition Peronist Party wins control of both chambers of Congress in mid-term elections.

November 6, 2001–Argentina conducts a second debt swap, exchanging $60 billion of bonds with an average interest rate of 11-12% for extended maturity notes carrying only7% interest rate. International bond rating agencies consider it an effective default.

November 30, 2001–A run on the banks begins, with central bank reserves falling by $2 billion in one day. President de la Rua imposes $1,000 per month limitation on personal bank withdrawals.

December 1 & 2, 2001–Protest erupt due to government imposing restrictions on the amount of bank deposit withdrawals. A limit was set at $250 per week in cash. In addition only $1000 was allowed to be taken abroad, and firms required special permission to make foreign payments above that amount.

December 14, 2001–Supermarket looting begins.

December 19, 2001–The government imposes deep budget cuts. The result is protesting and a state of civil unrest. The government declares a state of siege.

December 19-20, 2001–President de la Rua, Economy Minister Cavallo, and many other cabinet members resign. Rioting and looting continues resulting in 28 deaths.

December 21, 2001–President Puerta is named interim president. He resigns 48 hours later.

December 23, 2001–The new president Adolfo Rodrigues Saa is appointed president. On the 26th of December a new floating currency is announced that will float against the dollar. At this time it is also announced that payments on public debt will be suspended. This creates the largest debt default in history.

December 30, 2001–President Saa resigns as president.

January 1, 2002–Senator Eduardo Duhalde is sworn in as president.

January 6, 2002–After passing legislation the currency board was dissolved. This resulted in an immediate 29% reduction in the value of the peso. An emergency bank holiday was declared and the capital markets were closed and not reopened until January 17.

February 11, 2002–The central bank allows the peso to float freely against the dollar while opening exchange houses and relaxing some restrictions on bank deposit withdrawals.

March 26, 2002–Foreign Exchange controls are tightened with limits on dollar purchases of $1,000 for individuals and $10,000 for firms, reduced hours of operation for exchange houses, a requirement of daily cash deposits for large retailers, and a restriction on conversion of Argentine stocks into ADRs. Banks and exchange houses will only be allowed to buy dollars if they transact at the official government-set exchange rates.

April 2002–Lavagna named new Minister of Economics. He implements a new program to stave off inflationary uncertainty.

May 2002–The Merval Index reaches its lowest point during the crisis of 89 as does the Burcap Index at 403.

Summer 2002–Economy begins to rebound due to higher export revenues and import substitution.

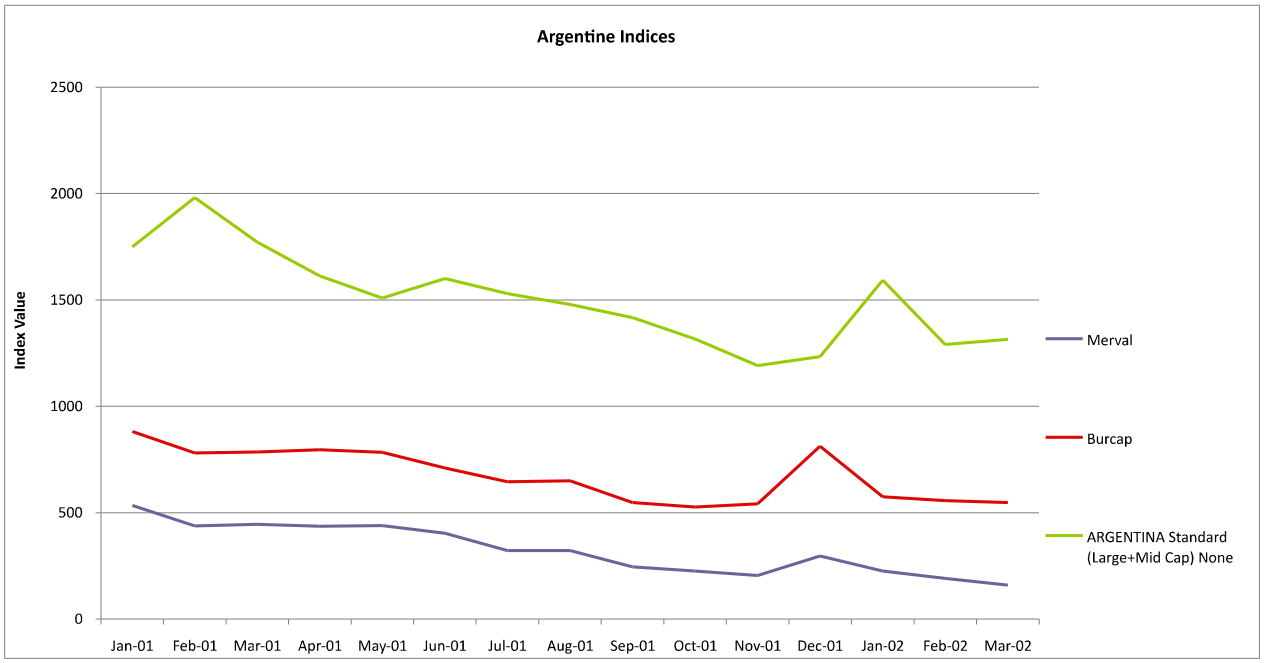
October 2002–Poverty level peaks at 58%

November 2002–Argentina defaults on a loan from the World Bank and also threatened to default on loans from the IMF due on January 2003.

May 2003–Nestor Kirchner becomes president of Argentina.

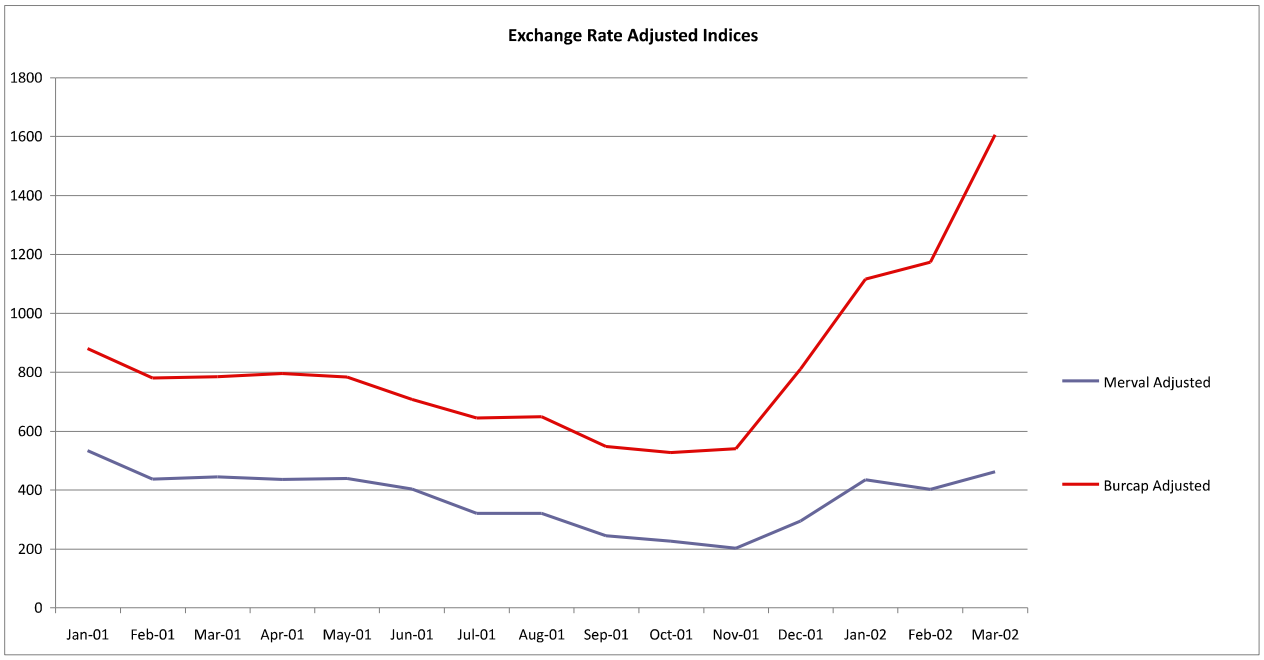
September 2003–Argentina defaults on almost USD$3 billion owed to the IMF.

Figure 1



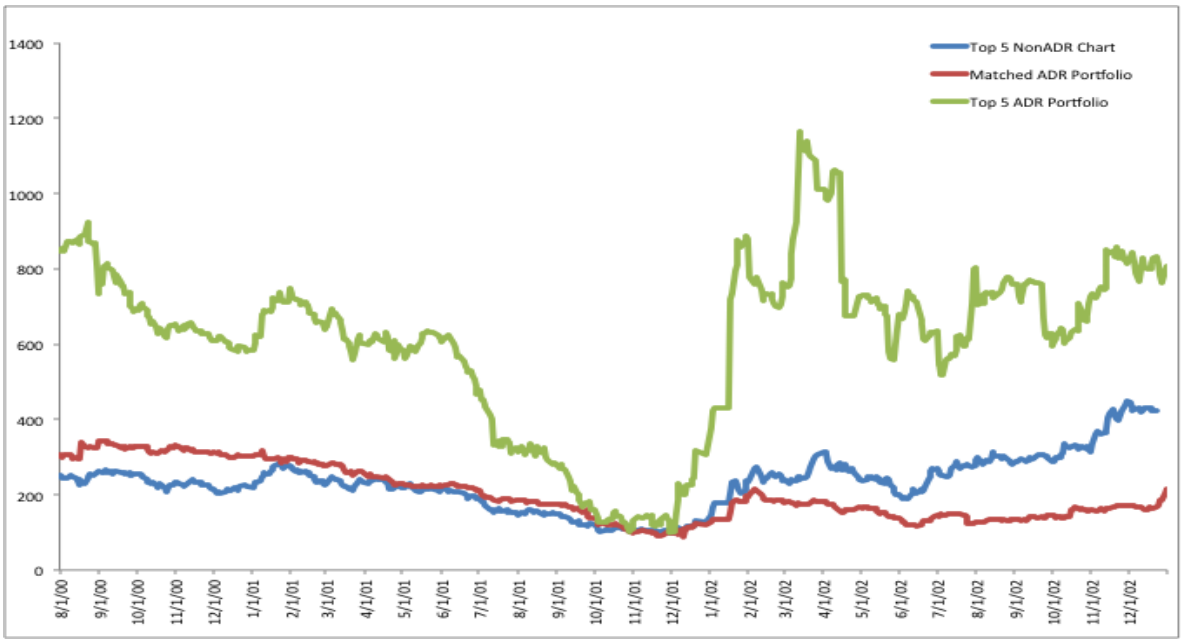
*Indices denoted in US dollars
Sources: Ministry of Economy of Argentina (Merval and Burcap) & MSCI

Figure 2



*Indices denoted in Argentine Pesos. Adjusted for exchange rate beginning January 11th 2002
Sources: Ministry of Economy of Argentina (Merval and Burcap) & MSCI

Figure 3 Non-ADR, Matched ADR, and Top 5 ADR Portfolios by Market Capitalization (August-September 2000, Base = 100 on November 30th 2001) Listed in pesos.



Sources: Bolsa de Comercio de Buenos Aires www.bolsar.com

Figure 4 Non-ADR, Matched ADR, and Top 5 ADR Portfolios by Market Capitalization (August-September 2000, Base = 100 on November 30th 2001) Listed in USD

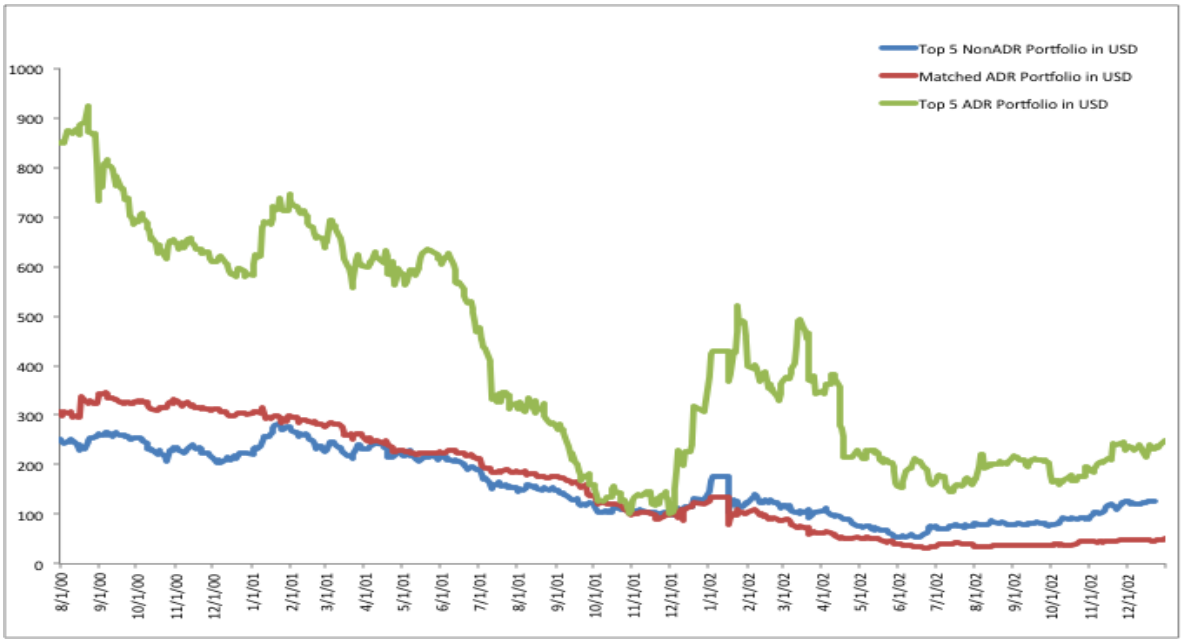
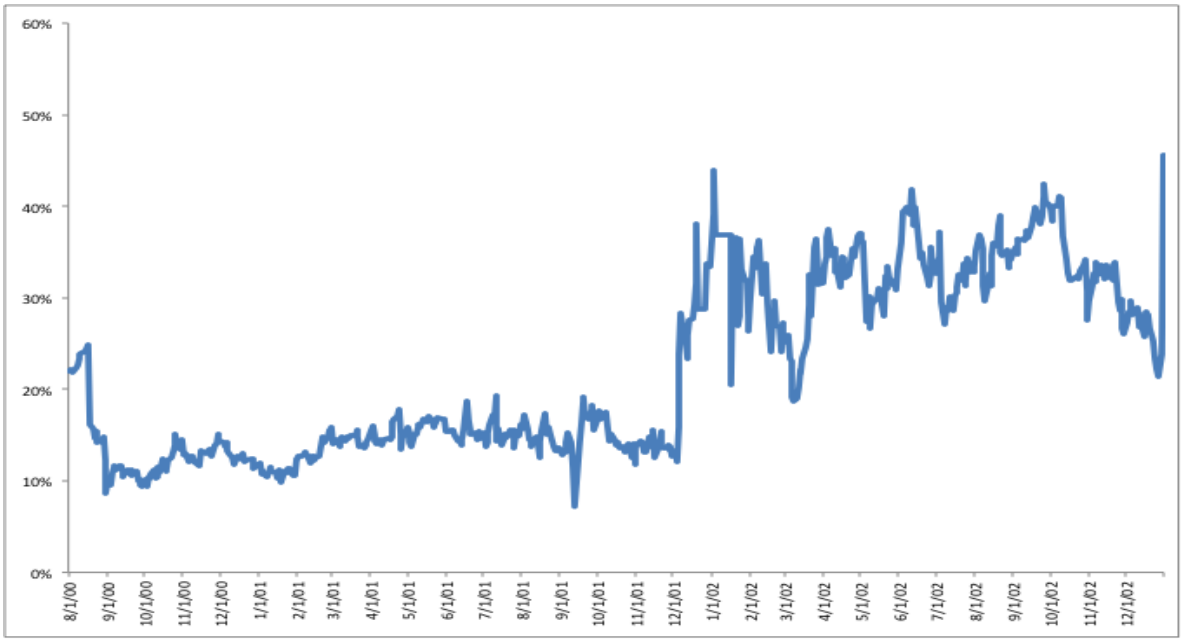
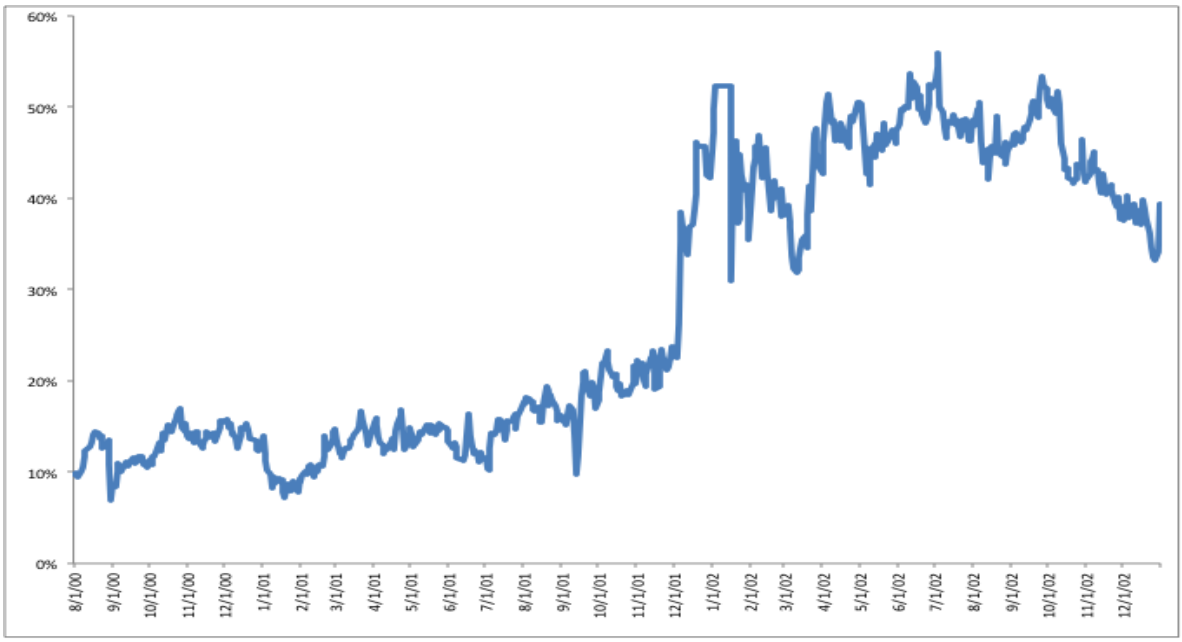


Figure 5 All ADR Stocks Premium



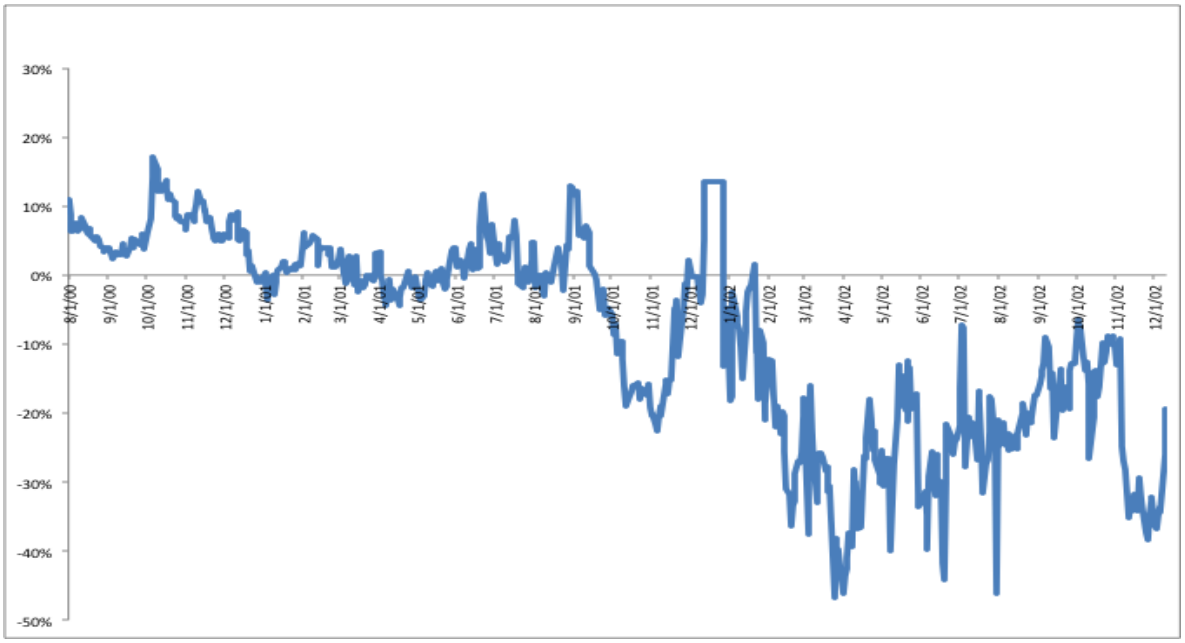
Sources: Bolsa de Comercio de Buenos Aires www.bolsar.com and Google Finance www.google.com/finance

Figure 6 Top 5 ADR Stocks Premium



Sources: Bolsa de Comercio de Buenos Aires www.bolsar.com and Google Finance www.google.com/finance

Figure 7 Matched ADR Stocks Premium



Sources: Bolsa de Comercio de Buenos Aires www.bolsar.com and Google Finance www.google.com/finance

Figure 8 Volume of the Top 5 ADR Portfolio

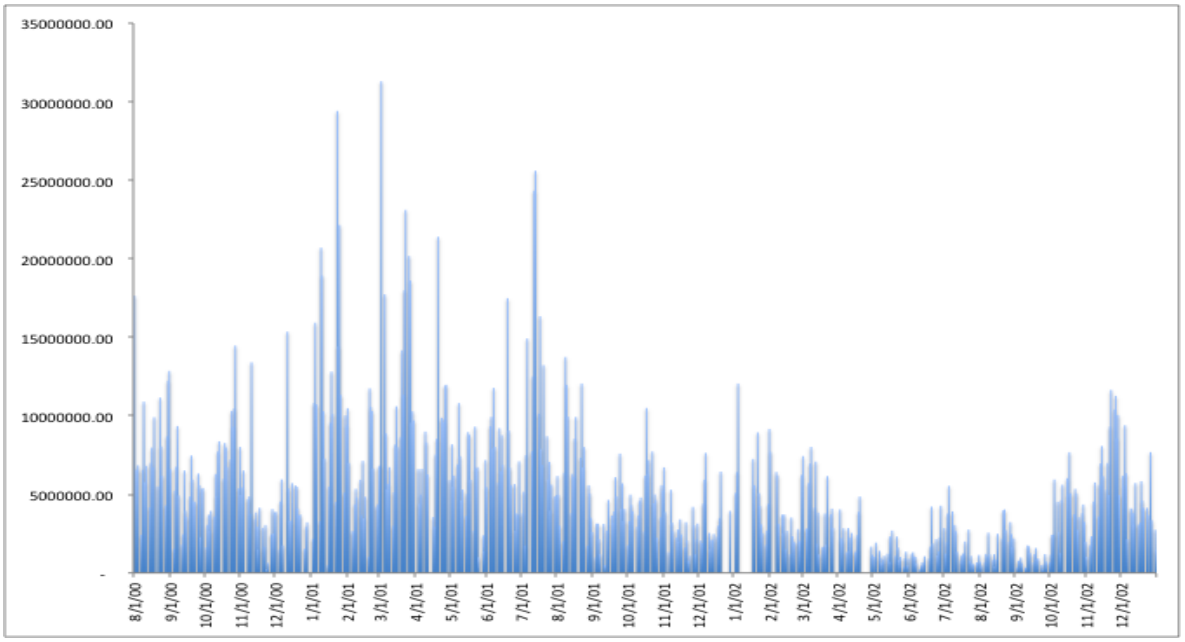


Figure 9 Volume of the New York Top 5 ADR Portfolio

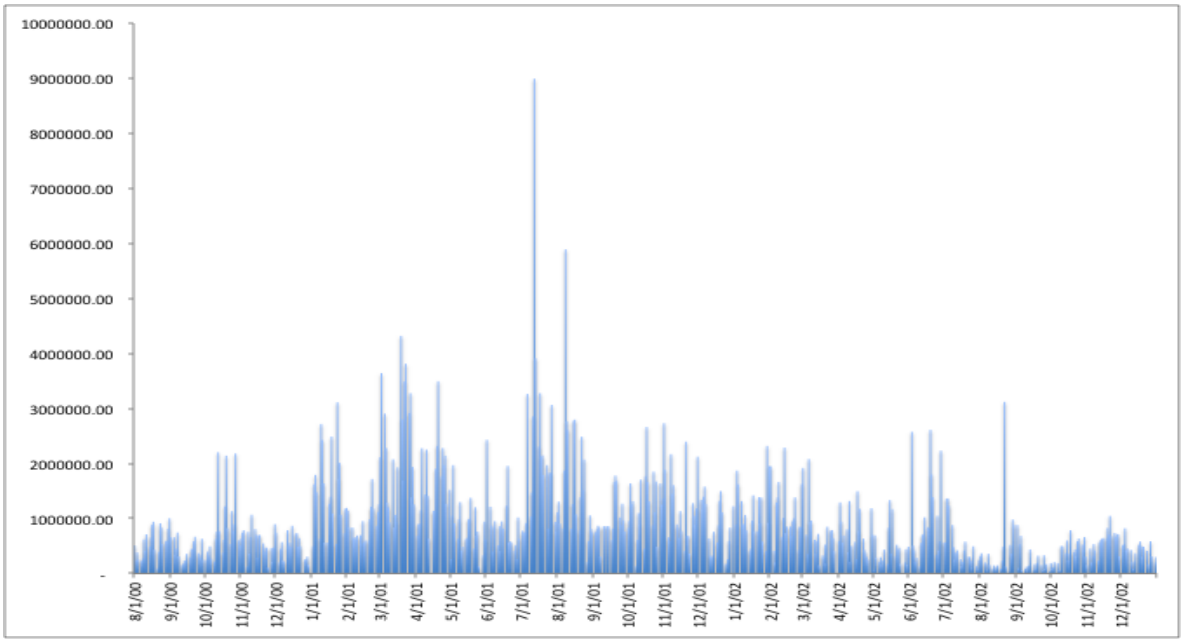


Figure 10 Volume of the Matched ADR Portfolio

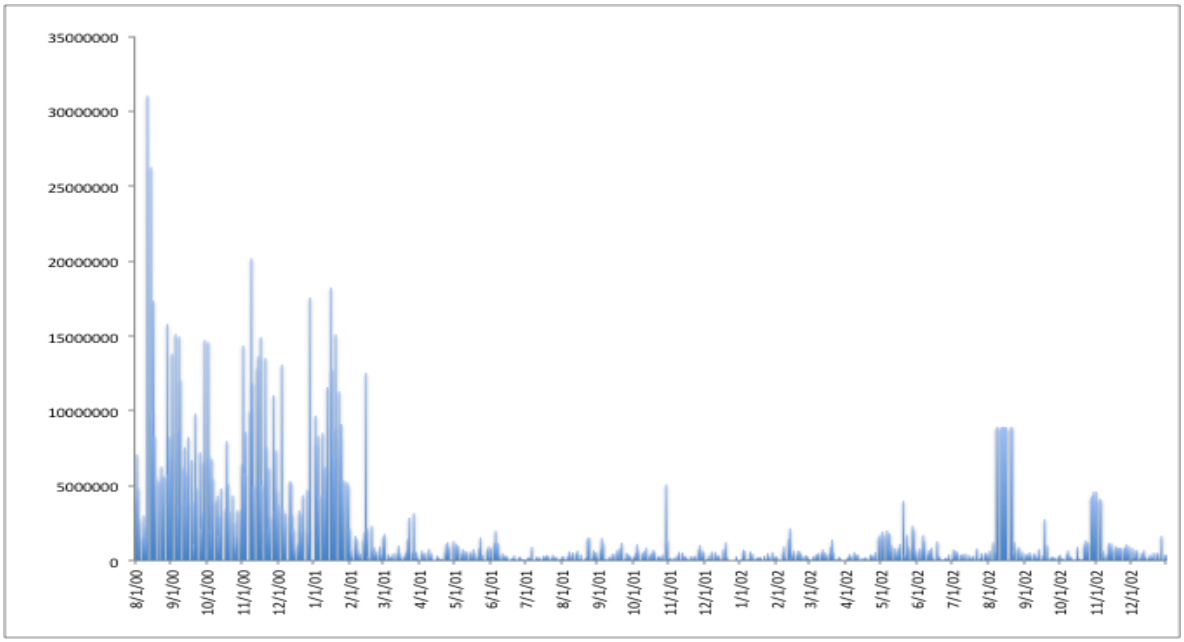


Figure 11 Volume of the Top 5 Non-ADR Portfolio

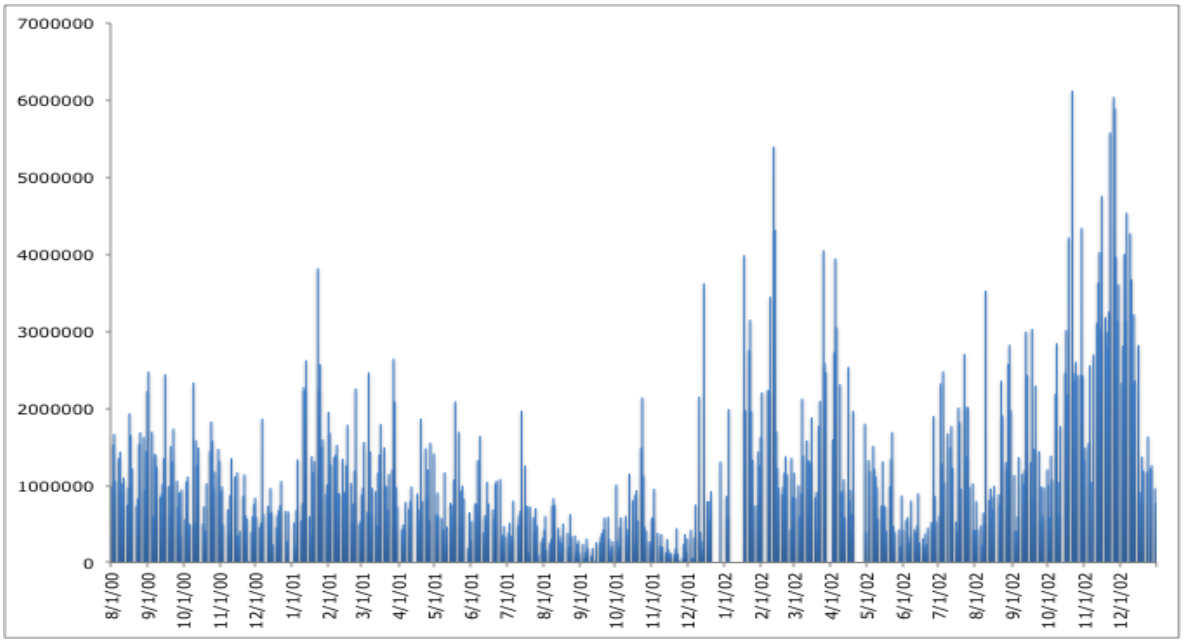


Table 1

Merval Index Additions and Deletions

Year	Quarter	Additions	Subtractions
2001			
	1		ASTR CRES GAROPECO
	2		BRIO CAPX
	3	CRES	GALI JMIN TEAR2
	4	PATY	CRES LEDE
2002			
	1	LEDE	BSUD BSUQ CECO2 CEPU2 PATY YPFD
	2		COME IRSA LEDE RENO STD TGSU2

Source: Bolsa de Comercio de Buenos Aires

Table 2

All Argentine ADRs

*Highlighted Stocks are used in the All ADR Portfolio

DR ISSUE	SYMBOL	EXCHANGE	INDUSTRY
Alto Palermo	APSA	NASDAQ Stock Market	Real Estate Inv&Serv
Andes Energia	ANEGY	OTC	Gas,H20&Multiutility
Banco Hipotecario	BHPTY	OTC	Banks
Banco Hipotecario - 144A	--	--	Banks
Banco Macro	BMA	New York Stock Exchange	Banks
Banco Patagonia	BPTGY	OTC	Banks
Banco Patagonia - 144A	--	--	Banks
Banco Patagonia - Reg. S	--	--	Banks
BBVA Banco Frances	BFR	New York Stock Exchange	Banks
Carlos Casado	CCASY	OTC	Food Producers
Central Costanera - 144A	--	--	Electricity
Cresud	CRESY	NASDAQ Stock Market	Food Producers
Edenor	EDN	New York Stock Exchange	Electricity
Empresa Distribuidora Electrica - 144A	--	--	Electricity
Empresa Distribuidora Electrica - Reg. S	--	--	Electricity
Grupo Clarin - 144A	--	--	Media
Grupo Clarin - Reg. S	GCLA	London Stock Exchange	Media
Grupo Financiero Galicia	GGAL	NASDAQ Stock Market	Banks
IRSA Inversiones y Representaciones	IRS	New York Stock Exchange	Real Estate Inv&Serv
MetroGas	MGS	New York Stock Exchange	Gas,H20&Multiutility
Mirgor - 144A	--	--	Automobiles & Parts
Mirgor - Reg. S	MGDD	London Stock Exchange	Automobiles & Parts
Nortel Invesora	NRTPY	OTC	Fixed Line Telecom.
Nortel Invesora - Series B	NTL	New York Stock Exchange	Fixed Line Telecom.
Pampa Energia	PAM	New York Stock Exchange	Electricity
Petrobras Energia	PZE	New York Stock Exchange	Oil & Gas Producers
Sociedad Comercial Del Plata - 144A	--	--	Pharma. & Biotech.
Socotherm Americas	SOCOY	OTC	Industrial Engineer.
Sol Petroleo	SLEOY	OTC	Oil & Gas Producers
Telecom Argentina	TEO	New York Stock Exchange	Fixed Line Telecom.
Telefonica de Argentina	TAR	New York Stock Exchange	Fixed Line Telecom.
Tenaris	TS	New York Stock Exchange	Indust.Metals&Mining
Ternium	TX	New York Stock Exchange	Indust.Metals&Mining
TGLT - 144A	--	--	Real Estate Inv&Serv
TGLT S.A.	TGLTY	OTC	Real Estate Inv&Serv
Transportadora de Gas del Sur	TGS	New York Stock Exchange	OilEquip.,Serv.&Dist
YPF	YPF	New York Stock Exchange	Oil & Gas Producers

*Excludes one stock: Siderca ERCA was consolidated with Tenaris in 2002-2003

Source: Bank of New York ADR Directory http://www.adrbnymellon.com/dr_directory.jsp

Table 3

TOP 5 ADR Portfolio

Rank	Stock	Average Volume (in pesos)	Average Market Cap (in pesos)
1	TECO2	3,183,918.68	14,799,514.61
2	GGAL	1,372,372.24	2,240,826.01
3	FRAN	879,338.77	6,324,057.70
4	IRSA	831,196.17	1,989,953.83
5	YPFD	198,006.70	7,529,030.80

*Rank based on average trading volume from August-September 2000

TOP 5 Non-ADR Portfolio

Rank	Stock	Average Volume (in pesos)	Average Market Cap (in pesos)
1	ACIN	473,717.31	389,403.36
2	ERAR	386,306.02	1,115,674.87
3	MOLI	199,008.26	372,485.51
4	GALI	99,596.95	303,827.80
5	BMA	97,761.5	131,578.14

* Rank based on average trading volume from August-September 2000

Matched ADR Portfolio

Rank	Stock	Average Volume (in pesos)	Average Market Cap (in pesos)
1	APSA	135,067.89	684,280.16
2	TGSU2	349,408.11	531,100.44
3	TEAR2	92,519.37	306,805.17
4	PESA	54,960.82	212,314.32
5	CRES	75,321.11	63,189.16

*Rank is based on average market cap from