TWO SIDES OF THE SAME COIN?
STOCK MARKET REACTIONS TO THE BRAZILIAN DEVALUATION

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ABSTRACT

Significant exchange rate devaluations generally result in significant economic disruptions. Export firms, however, experience increases the value of foreign currency revenues raising their local currency profits and market values. Similarly, exported-oriented firms in an integrated trading partner country experience lower future profits and declines in value. We conduct an event study of the effects of the 1999 Real devaluation on a cross-section of publicly traded Brazilian and Argentine firms. Brazilian export firms outperform Brazilian non-export firms in the months after this crisis. We find no differential impact of the Real devaluation on Argentine exporters versus non-exporters.

I. INTRODUCTION

A firm's value is related to the present discounted value of its expected future free cash flows. Free Cash Flows (FCF) depend crucially on the interplay between its revenues and expenses. When a firm's revenues and expenses are in different currencies, exchange rate changes will change the firm's future FCF's in its home currency and therefore the market value of its stock.

To the extent the currency devaluation results in a sustained contraction of the domestic economy, a non-export firm whose expenses and revenues are generated domestically may experience declining unit sales, revenues and profits. In contrast, a firm that is primarily an exporter should be positively affected by the same devaluation because its expenses are in local currency but its revenues in foreign currency now translate into larger amounts of local currency. As a result, local currency profits an market value of an export firm may increase despite negative effects on the local economy. The first country's currency devaluation will have consequences for firms. The market value of export-oriented firms in any closely integrated trading partner will be negatively affected by the devaluation using similar reasoning.

Currency crises, and their attendant large devaluations, should have significant and differential effects on the valuation of firms across countries that are close trading partners. This paper examines the effects of Brazil's Real devaluation in December 1999 on a cross-section of export and non-export firms in Brazil and Argentina. The Real fell in value by over 50% against the US dollar (and Argentine peso) in less than a month, providing an opportunity to study how this currency crisis affected the share returns of publicly traded firms on the Brazilian and Argentine stock market.

II. BRAZILIAN DEVALUATION WITHIN MERCOSUR

As the two largest members of Mercosur, or the Southern Common Market, Brazil and Argentina represent the bulk of trade within the union. This tight integration between the two economies meant that Brazil's devaluation of the Real in 1999 resulted in a significant impacts on both countries.

Real revenues for Brazilian exporters increased 30% in the year after the devaluation. This should have increased Real-denominated net profits and resulted in positive excess returns to Brazilian exporters in the months after the devaluation relative to those of publicly traded Brazilian non-export firms. Argentine export firms experienced a 20% fall in peso revenues in 2000. If the Argentine stock market anticipated these lower future revenues and profits, then publicly-traded Argentine exporters should have negative excess returns after the devaluation. Non-exporter Argentine firms also suffered lower revenues and profits are as a result of the influx of cheap Brazilian exports after the devaluation. Thus it is not clear whether Argentine exporters will exhibit significantly worse stock market performance than non-exporters in the months after the devaluation.

We use regression analysis on the cross-section of publicly traded Brazilian and Argentine firm returns to examine whether Brazilian (Argentine) exporters fare better (worse) than Brazilian (Argentine) non-exporters in the face of the large Real devaluation. We include variables to control for possible market anomalies based on firm size, market liquidity, or price to earnings or book value [1] [2]. Our focus is on the difference on how firm cumulative excess returns in the months after the crisis vary between exporters and non-exporters.

III. DATA SOURCES AND DEFINITIONS

Share prices and returns comes from the International Finance Corporation (IFC) Emerging Markets Database. We have a panel of 71 publicly quoted Brazilian firms and 29 Argentine firms whose monthly share price information is available from 12 months prior to the Real crisis through twelve months after the crisis (1998:12 through 2000:12) The dataset consists of: (a) 34 exporter firms and 37 non-exporter firms for Brazil and (b) 11 exporter firms and 18 non-exporter firms for Argentina. Exporter firms were identified based on a combination of their reported SIC codes and the Instituto Nacional de Estadística y Censos [3] regarding imports and exports between Argentina and Brazil by industry.

Average monthly returns over the 12 months prior to the Real crisis of December 1999 were calculated for each firm. This average return was used as a proxy for each firm's "normal" return in our study. Excess returns in each of the cumulative three-month periods after the Real crisis were calculated for each firm as the difference between the firm's actual return in those months and its "normal" return. Our regression analysis uses the 1-3 month, 4-6-month, 7-9 month and 10-12 month cumulative excess returns as the dependent variable to be explained.

The IFC database was used to generate "market anomaly" variables to control for the possibility that cumulative excess return differences across firms were the result of Brazil and Argentine stock market inefficiencies, rather than the export/non-export character of the firms. We follow Chari and Henry (2001) in our choice of these variablesand construction of these variables: EXPORT- Dummy for Exporter; TURNOVER-% of Market Turnover (Value traded); P/E -Price/Earnings ratio; P/Bk-Price to Book Value ratio.

IV. REGRESSION RESULTS

Our analysis of the effect of the Real crisis on the stock returns of Brazilian and Argentine firms is conducted in two stages. In the first stage we examine the 1-3-, 4-6, 7-9 and 10-12 three-month cumulative excess returns for evidence of a significant difference across export firms versus non-export firms. This involves running the simple regression (1) over the cross-section of firms for each cumulative excess return measure. We expect that the coefficient on the EXPORT variable will be

positive (negative) and significantly different from zero if exporters fare better (worse) as a result of the devaluation than non-exporters.

$$ER_i = \alpha_0 + \alpha_1 EXPORT_i + \varepsilon_i \tag{1}$$

Table 3 presents the results for the simplified model that estimates firm returns for the period preceding, the event month and 3-month intervals post-Real crisis. Recall that the EXPORT variable measures the significance that cumulative excess returns are higher for Brazilian export firms than for domestic firms. The major finding in the first model is that the EXPORT variable is significant for the cumulative three-month excess returns continuing until 9 months post crisis. As hypothesized, this implies that export firms in Brazil do significantly better than domestic firms post crisis.

Table 3. Simple Return Regression Results For Cross-Section Of Brazilian Firms

Variables	Month -1 Excess Returns	Month 0 Excess Returns	Cumulative 1-3-Month Excess Returns	Cumulative 4-6-Month Excess Returns	Cumulative 7-9-Month Excess Returns	Cumulative 10-12-Month Excess Returns
Constant	**-0.1021*****	0.0506	**0.3495*****	**0.1402*****	-0.0681	**0.1222****
EXPORT	**0.0840****	**0.3253*****	**0.2648*****	**0.1979****	**0.2267*****	0.0804
R^2	0.1653	0.3308	0.6246	0.3986	0.1249	0.1962

Table 3 tests the significance of the variables in our model as outlined in equation 1. Significance levels for the results are reported as ***,** and * which indicate 1%, 5% and 10% significance levels respectively.

The dramatic increase in returns for exporter firms appears as early as the crisis month itself implying that the Brazilian stock market reacted quickly to the crisis. Participants assess the expected effects of the devaluation on the financial position of firms and immediately force share prices, and returns, to reflect these expectations. Brazilian exporters' stock prices and returns, in Real, increase because their cash flow positions are likely to be positively affected by the currency depreciation. Note also that the intercept in the 1-3 month and 4-6 month cumulative excess return regressions is significantly positive, indicating that both types of Brazilian firms, on average, enjoyed positive excess returns in the six months after the crisis. In addition, the R^2 of the excess return regressions increases as one moves from the crisis month to the first 3-month period post-devaluation. This indicates that there may have been a continuing adjustment period after the crisis while the market fully evaluated the differential effects of the devaluation. None of the additional "market anomaly" variables are significant in any of the return regressions.

Table 4 presents the results for the simple model that estimates firm returns for the period preceding the event month and 3-month intervals post Real crisis for Argentina. The first observation is that export oriented firms perform no differently than the domestic firms both pre and post crisis. The export variable is positive across the board however it is not significant. The significant constant variable in the month prior to the crisis, crisis month and 3 months post is consistent with our intuition. If Argentine firms suffer lower revenues and profits due to the crisis, the intercept will reflect the negative returns for all firms in the sample. Our results indicate an approximate 20% drop in returns for all firms in the month of the crisis and a continued fall of 13% in the 3 months post crisis. Returns do rebound from months 4-6, however the cumulative effect of the crisis is still negative given the prior months

results. This may indicate a correction in the market's assessment of the crisis' impact on Argentine firms, i.e. an adjustment to an overreaction in the crisis month and 3 months post crisis.

Table 4. Simple Return Regression Results For Cross-Section Of Argentine Firms

Variables	Month -1 Excess Returns	Month 0 Excess Returns	Cumulative 1-3-Month Excess Returns	Cumulative 4-6-Month Excess Returns	Cumulative 7-9-Month Excess Returns	Cumulative 10-12-Month Excess Returns
Constant	-0.1005***	-0.1854***	-0.1260***	0.1507**	0.0218	-0.0328
EXPORT	0.0157	0.0397	0.0438	0.0730	0.0642	0.0494
R^2	0.6119	0.6713	0.3574	0.3422	0.0376	0.0065

Table 4 tests the significance of the variables in our model as outlined in equation 1. Significance levels for the results are reported as ***,** and * which indicate 1%, 5% and 10% significance levels respectively.

V. CONCLUSIONS

The purpose of this paper was to investigate how the values of publicly traded firms react to a significant currency devaluation. There is strong evidence of significantly higher returns to Brazilian exporters after the devaluation relative to non-exporting Brazilian firms. Brazilian exporters experience positive cumulative excess returns over the year after the devaluation, with excess returns becoming smaller the further away from the devaluation. Brazilian non-export firms exhibit positive, but smaller, excess returns in the periods immediately after the devaluation. This is likely indicative of the lack of financial crisis associated with the devaluation and the speed with which macroeconomic stability was attained.

In contrast, our results for Argentina are puzzling. The conventional macroeconomic view is that the Brazilian devaluation hobbled Argentina's growth in the following three years and that this was one of the main contributors to the collapse of Argentina's currency board arrangement. We find that Argentine firms did not experience much in the way of negative excess return, except in the three months after the Real's devaluation, and that these are partially reversed by positive excess returns later in the year. We find that there is no significant difference in excess returns between Argentine exporters and non-export firms. These results suggest that perhaps financial markets are "asymmetrically efficient", focusing on the effects on the devaluing country and overlooking consequences for trading partners.

REFERENCES

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