EQUITY VALUATION EFFECTS OF FOREIGN CAPITAL EXPENDITURES: THE ROLE OF PROPERTY RIGHTS

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A summary of our main findings in this study was published as "Property Rights Ambiguity and the Effect of Foreign Investment Decisions on Firm Value," in the *Index of Economic Freedom*, 2002, published by the Heritage Foundation and the *Wall Street Journal*. It was published in Spanish as "Ambigüedad en los derechos de propiedad y el efecto de las decisiones de las inversiones extranjeras sobre el valor de una empresa," in *Indice de Libertad Economica*, 2002, by the same publisher.

The authors are grateful to Kin Blackburn, Kent Hargis, and Rod Roenfeldt for valuable comments, advice and guidance, and to Ellen Roueche for preparation of this manuscript. We are indebted to Phil Truluck, Executive Vice President of The Heritage Foundation, for providing data on property rights and for valuable discussion.

Abstract

We examine common stock price reactions to offshore capital expenditures undertaken by U.S. multinational firms. Arguments based on optionality and expropriability lead to predicted price reactions conditioned on the degree of ambiguity in property rights enforcement in the host country. Our findings based on 159 foreign investment decisions reveal a significant influence of property rights ambiguity on the valuation effect. For investment in countries where property rights are enforced as reliably as in the

U.S., firms experience an average increase in equity value of $41.83 million, or $1.614 per dollar invested. For countries with greater ambiguity in enforcement, firms experience an average loss of $39.28 million. Controlling for risk, leverage and differential taxes, we find that property rights ambiguity is the dominant explanatory factor for the market's reaction to these decisions.

1. Introduction

In this study, we examine the effects of offshore capital investment announcements on equity values of multinational corporations (MNCs) based in the U.S. Such effects have been examined for domestic investment by McConnell and Muscarella (1985) who report an average stock price reaction of about 1 percent to increases in capital expenditures. Offshore investment decisions merit separate study due to the potentially large differences in the investment settings between the U.S. and host countries with respect to taxes, regulation and other influences on property rights. By property rights, we mean protection from expropriation via taxes and other official levies, including extralegal payments such as bribes, and the degree of certainty in enforcement of codified rights and contracts.

LaPorta, Lopez-de-Silanes, Shleifer, and Vishny (1997, 1998) establish the effect of the historical rule of law on capital markets and corporate finance. LaPorta, Lopez-de-Silanes, and Shleifer (1999) further extend the impact of law on financial structure to explain the choice of corporate form preferred in different countries. Under systems with a strong rule of law, the expectation of shareholders is that the MNCs' claims will be satisfied and its assets protected against unjust seizure or reduction in value. That the expected proportion of profits to be retained by the investing firm should affect the market's assessment of value is well established. Another important factor, the ambiguity with which rights are upheld, may also condition the market's response. To see why, consider that a capital investment contains an implicit short call option, whereby the host country may expropriate profits and property by changing its laws or merely failing to enforce existing laws. Greater ambiguity or uncertainty about enforcement of codified rights essentially adds to the core volatility of the return on the capital investment; i.e., the volatility that would prevail if the investment were undertaken in an idealized setting consistent with Coase (1960). Added uncertainty arising from unreliable rights enforcement drives the call

option value up, hence the investment's total net present value (NPV) is reduced (see Mahajan, 1990, for formal treatment of the expropriation call option).

Recently, the Heritage Foundation began publishing its *Index of Economic Freedom* which ranks countries, including the U.S., by several dimensions of what may be loosely termed "economic freedom." The Heritage Foundation Index captures the current state of property rights protection in the host country legal system. Their Factor 8, "Property Rights," is measured on a scale from 1 (private property is guaranteed by the government) to 5 (private property is outlawed). The scale is fully described in the Appendix. Based on the definitions of each ranking as well as discussions with Heritage Foundation officials, Factor 8 is thought to reflect what we are terming ambiguity in enforcement of property rights. We employ these rankings in our examination and find that the equity market's response to investment announcements is conditioned on Factor 8; i.e., shareholder wealth is eroded significantly to the extent the host country's property rights environment is uncertain or ambiguous.

In Section II, we lay the conceptual foundation for the analysis. Equity value reactions to offshore capital investment announcements are examined in Section III. In addition, we estimate a linear model of the equity valuation effect using various factors such as tax rates and Factor 8 of the *Index of Economic Freedom*. Our findings are summarized and interpreted in Section IV.

2. Property Rights And The Value Of Capital Investment

The manner in which cash flows from investment are allocated to claimants is determined by the property rights system, which assigns and enforces the right to consume, the right to derive income and the right to alienate property. Mahajan (1990) models expropriation as a call option on assets and output. The foreign government holds a long call position, and if exercised, it is effectively a 100% or confiscatory tax in Mahajan's model. In this analysis, the short side of this option is borne by a multinational corporation (MNC) headquartered in the U.S. Assets with high volatility have values that are likely to grow to the point where expropriation becomes lucrative. Though Mahajan's model is simplified so that expropriation (exercise) is on an all-or-none basis, the same reasoning extends to fractional expropriation. For instance, the host country may unexpectedly increase taxes following investment.

According to Mahajan's (1990) model, greater volatility (hereafter σ) in assets' cash flows increases the likelihood of expropriation, hence the call is more valuable and the net present value (NPV) of the investment is accordingly reduced. The firm's level of debt financing (hereafter LEVERAGE) may aggravate the nature of the expropriation call, reducing NPV even more. This arises because, while a foreign government may extinguish the MNC's assets by expropriation, debt claims against the firm will remain, amplifying the burden imposed on shareholders.

One may view σ as the core level of uncertainty about an asset's value, which then may be amplified by the inherent level of ambiguity in enforcement of property rights. Thus, there should be greater uncertainty about cash flows for a project in a given industry that is undertaken in a country characterized by ambiguous rights enforcement than for the same project undertaken in the U.S.

Conversely, for a levered firm, the role of σ and property rights ambiguity could be opposite that just argued. This is developed by English (1998) in an international generalization of the results of Galai and Masulis (1976). The value of the effective *long* call option held by levered equityholders is increasing in total uncertainty, hence expected NPV may benefit from foreign investment in an ambiguous rights environment. Combining the arguments of Mahajan (1990) and English (1998), equityholders of a levered firm undertaking foreign investment may hold metaphorical long and short call positions simultaneously. Thus equityholders effectively may hold a "bull spread" position; i.e., a floor on losses due to limited liability and a ceiling on gains due to the expropriation call.

3. Valuation Effects Of Offshore Investment

A. The Sample

The event examined in this study is the announcement of increases in the levels of capital investment in countries outside the U.S. by companies listed on U.S. exchanges. The types of announcements examined included: (1) plant initiations or expansions, (2) divisional acquisitions, (3) purchases of capital assets already in the property rights environment, and (4) the creation of divisions or offices in different property rights environments. By using only the announcements of U.S. traded firms, the security price reactions to reallocations reflect the changes in claim value to investors residing in one property rights environment.

This reduces the likelihood that these changes reflect the effects of differing property rights environments on the investors rather than the investments.

The announcements included satisfied the following criteria: (1) the announcement appeared in *The Wall Street Journal* or on its wire service, as determined by *WSJ Ondisc*; (2) the firm making the announcement has securities listed on a U.S. exchange (including ADRs); (3) the assets which are expanded or purchased are exposed to property rights regimes different from those of the stock (i.e., the firm is changing its asset base outside the U.S.); and (4) the event was not an acquisition of a minority equity stake in another company, a merger between two companies,[1] or a change in a joint venture position. Announcements for the period 1989 through 1997 are included. The search process identified 435 announcements by firms with returns collected by the Center for Research in Security Prices (CRSP), 426 of which did not have missing returns during the event window or more than 20 days during the estimation period. Of these, 277 of the announcements were not contaminated by other material announcements during a 5-day window centered around the event day.

In Table 1, a profile of the sample announcements is presented. Property rights rank 1, meaning property rights are guaranteed as in the U.S., represents over 55 percent of the sample, while ranks 3, 4, and 5 comprise only 25 percent. The announcement events are not clustered in calendar time.

Plant investments and divisional acquisitions comprise a majority (over 60%) of the sample. Investments are undertaken in 51 different countries. Canada (35), the U.K. (25), Mexico (19), France (15) and China (15) have the largest representation, with the 168 other events spread over 46 remaining nations.

B. Abnormal Returns

For the sample of 277 announcements, we estimate two-day abnormal returns from the market model estimated over the period t = -220 to t = -30. The mean (median) abnormal return is .3129 percent (.1278 percent); the mean is significant at the .08 level (Z = 1.745). The positive mean abnormal return is only marginally statistically different from zero, and it is much smaller in economic significance than price reactions to domestic investment decisions documented by McConnell and Muscarella (1985). It will become clear that the nearly insignificant

Table 1
Profile of sample events

	Full Sample		Sample for Cross-Sectional Model	
	Number	Frequency(%)	Number	Frequency(%)
Property Rights Rank				
1	145	52.35	88	55.35
2	64	23.10	41	25.79
3,4,5	68	24.55	30	18.87
	277		159	
Event Year				
1989	30	30.83	22	13.84
1990	24	8.66	14	8.81
1991	19	6.86	10	6.29
1992	16	5.78	9	5.66
1993	41	14.80	17	10.69
1994	37	13.36	23	14.47
1995	39	14.08	21	13.21
1996	34	12.27	18	11.32
1997	37	13.36	25	15.72
	277		159	
Listing				
NYSE	223	80.51	127	79.87
NASDAQ	45	16.25	26	16.35
AMEX	9	3.25	6	3.77

mean price reaction arises to a large extent from the wide variation in property rights environments in the sample announcements.

To examine this, we first compare abnormal returns for the 145 announcements of investments in environments where property rights are strongest (rank 1 for Factor 8) with returns in all other environments (ranks 2, 3, 4, and 5). For rank 1, the mean (median) abnormal return is .6421 percent (.3360 percent), and for ranks 2, 3, 4, and 5 (n = 132), the mean (median) is -.0554 percent (-.1539 percent). For rank 1, the mean abnormal return is positive and significantly different from zero at the .01 level (Z = 2.854). The sample means of rank 1 versus ranks 2, 3, 4, and 5 are significantly different at the .01 level (t = 2.68), as are the sample medians (Z = 2.90), hence the equity market responds more favorably to capital investment in rank 1 countries such as Canada and Great Britain, where property rights are relatively unambiguous. Gleason, Mathur, and Mathur (1999) also find small average abnormal returns to announcements in countries which have poor property rights. They investigate the shareholder response to announcements of investment in former Soviet Republics. For several subsamples, the average abnormal return in their study is negative and, occasionally, statistically significant. Among other possible explanations, both their findings and ours are consistent with the argument by Mahajan

(1990) that foreign investment includes an implicit short call option whose value is directly related to uncertainty in the property rights environment.

We repeat the analysis for one group of ranks 1 and 2 and another group with ranks 3, 4, and 5. The mean abnormal return for the 209 investments in environments ranked 1 or 2 is .4739 percent, compared to -.1950 percent for ranks 3, 4, and 5 (n = 68). The mean abnormal return for ranks 1 and 2 is significant at the .01 level (Z = 2.461). The medians for the two samples are .2030 percent and -.3296 percent, respectively. The differences in means and medians are significant at the .03 level (t = 2.14 for mean difference; Z = 2.21 for median difference).

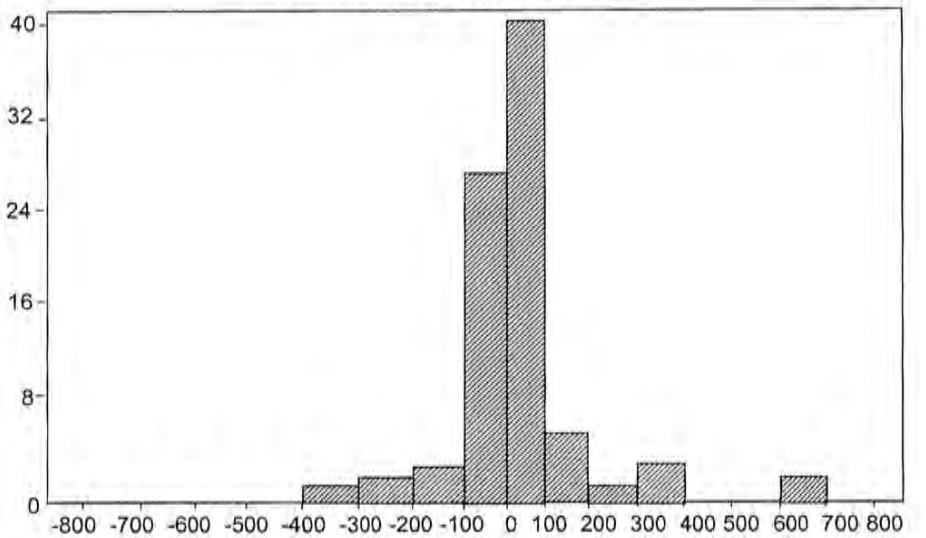
By scaling the abnormal returns by the firms' equity values, we can assess the total dollar effect on firm values. The resulting values may be interpreted as net present values (NPVs) of the investment decisions assessed by the capital markets, to the extent the announcements are unanticipated. The estimated NPV for announcements in rank 1 countries ranges from -$347.52 million to $2.336 billion, while that for the remaining countries runs from -$4.525 billion to $745.18 million. The mean (median) assessment of NPV for investment in rank 1 countries is $41.831 million ($1.179 million), while that for the remaining countries is -$39.279 million (-$2.017 million). Inspection of the data reveals substantial outliers which may distort the t-statistic (1.83) for differences in means (significant at only the .07 level), however, the medians are significantly different at the .03 level (Z = 2.117). Normality of the data is rejected (Wilk-Shapiro statistic = .3801; for perfect normality, the statistic is 1.0), hence we applied Efron's (1979) bootstrap procedure to means and medians. The bootstrap distribution of mean (median) differences based on 1,000 iterations results in a 95% confidence interval of $12.954 to $163.69 million ($.621 to $7.497 million), thus we conclude that the average dollar wealth effect for investment in rank 1 is greater than that for investment in ranks 2, 3, 4 or 5.

In Figure 1, we give the frequency distributions for NPV for the rank 1 countries (Panel A), and ranks 2, 3, 4, and 5 (Panel B), with 1 or 2 extreme observations omitted. Clearly, the frequency mass in Panel A is above zero while that in Panel B is below zero.

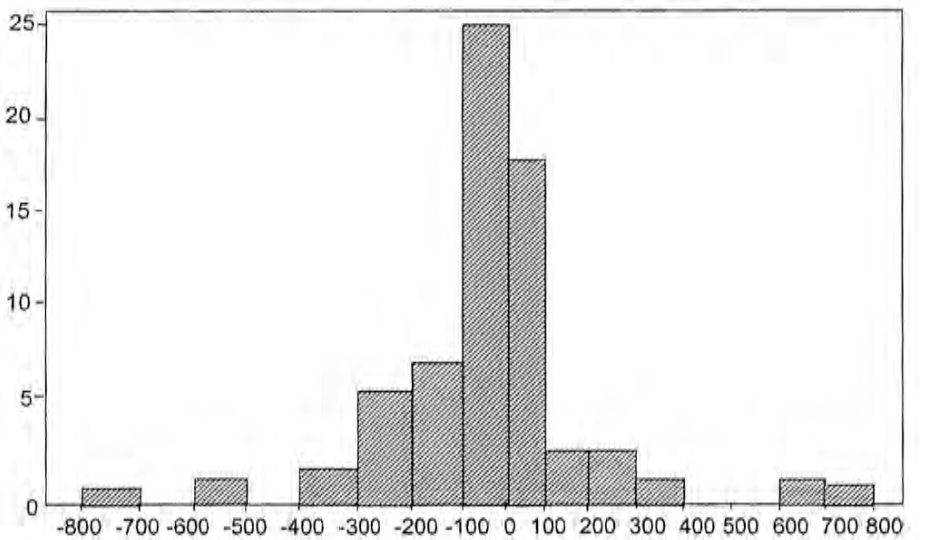
We also compare mean and median NPVs for investments in countries ranked 1 or 2 with countries ranked 3, 4 or 5. Mean (median) NPV for ranks 1 or 2 is $36.559 million ($1.025 million), whereas for ranks 3, 4 or 5, the mean (median) is -$99.412 million (-$2.694 million).

Figure 1
Estimated net present values (NPVs) based on announcement period abnormal return associated with 277 offshore capital investment decisions, 1989-1997

A. Propertty Rights Rank 1



B. Property Rights Ranks 2, 3, 4 and 5



The means are significantly different at the .01 level (t = 2.66), and the medians are different at the .03 level (Z = 2.214). Bootstrap distributions were consistent with these results. The 95% Bootstrap confidence interval for the mean (median) difference was $32.718 to $279.67 million ($.750 to $9.571 million).

For 159 of our sample firms, the announcements included the amounts to be invested. By adding this to the assessed value of NPV, then dividing the sum by the amount invested, we form an estimate of the present value index (PVI). This is the expected value of cash flows per dollar invested and controls for investment scale unlike our measure of NPV. For the full sample of 159 announcements, the mean (median) value of PVI is 1.220 (1.002). For investment in countries with rank 1 (n = 88), the mean (median) PVI is 1.614 (1.011). For the remaining countries (n = 71), the mean (median) is .745 (.968). The difference in means is significant at the .11 level (t = 1.60), while the medians are different at the .06 level (Z = 1.85). The bootstrap distributions of mean and median differences reveal frequencies of 2.5 percent below zero and 2.7 percent below zero, respectively. Thus we conclude that PVI for investment in rank 1 countries is on average greater than for ranks 2, 3, 4 or 5, and we note that the mean and median PVI for rank 1 are greater than 1.0, and the mean and median for the other group are less than 1.0. In Figure 2, we depict the PVI frequency distributions for rank 1 countries (Panel A) and ranks 2, 3, 4, and 5 (Panel B). The frequency mass in Panel A lies above 1, while that in Panel B lies below 1.

We also examined our measure PVI for the group with ranks 1 and 2 and compared with the group with ranks 3, 4 and 5. The results mirrored those for comparisons between rank 1 and ranks 2, 3, 4 and 5. For ranks 1 and 2, the mean (median) is 1.313 (1.004), while the mean (median) for ranks 3, 4 and 5 is .745 (.983). The means (medians) are significantly different at the .03 level (.11 level).

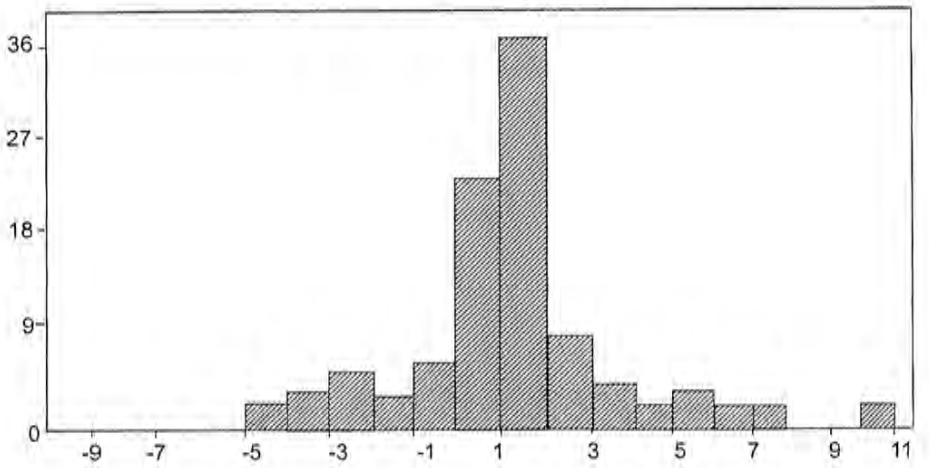
C. Cross-Sectional Analysis

C.1 The Empirical Model

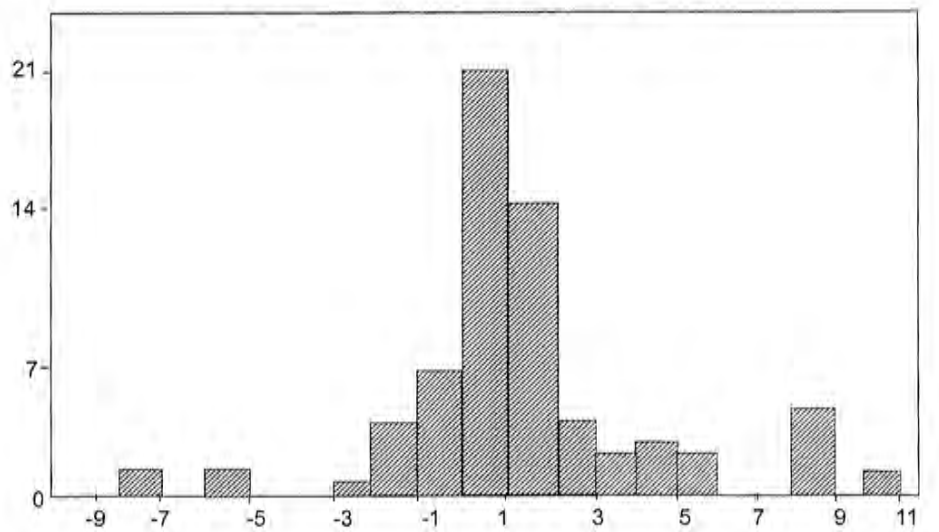
We have three measures of equity valuation effects of the investment decisions: abnormal returns, aggregate dollar changes in equity value (NPV), and aggregate dollar changes per dollar invested (PVI). Since the latter accounts directly for the scale of investment, we argue that it is the most appropriate measure, although we perform

Figure 2
Estimed present value indices (PVIs) for offshore capital investment announcements, 1989-1997, based on 159 announcement period abnormal returns

A. Property Right Rank 1



B. Property Rights Rank 2, 3, 4 and 5



parallel analysis using all three. In modeling valuation effects of these kinds of decisions, we confront two important challenges. The first is identification and measurement of control variables such as risk and leverage. We will establish a model with full controls and report results for the full version and various subsets.

The second obstacle is measurement of ambiguity in property rights, our variable of interest. Factor 8 of the *Index of Economic Freedom*, due to its ordinal nature, cannot be inserted in a regression model without severe consequences (estimators are biased and inconsistent). Typically this problem is treated by creating 0-1 indicator variables for all but one of the values, although this method restores unbiasedness and consistency at the cost of erosion of efficiency (Terza 1987; Kennedy 1998). Terza (1987) develops a transformation of the ordinal variable, in our case the property rights rank, which offers some improvements over the indicator variable approach. We apply both techniques.

First we describe the control variables. Although PVI accounts for investment scale, in the full model we include the dollar amount of the investment as reported by the firm at announcement. This is denoted by AMOUNT and is included to reflect possible economies or diseconomies of scale in investment; e.g., a $1 investment may produce a PVI of 1.1 while a $2 outlay may yield a PVI of 1.2.

We control for volatility with the standard deviation (s) of the daily equity return over the estimation period used for the event study. To the extent the expropriation option (e.g., Mahajan 1990) is valued by the market, we expect volatility to exert a negative influence on PVI. This effect could be offset by the real option value in the investment (e.g., English 1998), hence s could have a positive effect. The mean (median) of s is 1.25 (1.09) percent, and this variable ranges from .04 percent to 6.16 percent. To the extent that leverage may amplify the effect of the expropriation option as discussed above, we would expect the firm's debt/assets ratio (denoted LEVERAGE, measured in book value as of the year preceding the announcement) to have a negative influence on PVI. LEVERAGE has a mean (median) of 20.33 (18.36 percent), ranging from 0 to 88.85 percent.

Tax rates on earnings in the host country are denoted FORTAX and are taken from U.S. *Direct Investment Abroad* published annually by the Bureau of Economic Analysis of the U.S. Department of Commerce.[2] The domestic rate (USTAX) is measured as total U.S. taxes paid as a proportion of pre-tax income. The variable is an aggre-

gate measure for the U.S. corporate sector compiled by the Internal Revenue Service and published annually in *Corporate Income Tax Returns*. The mean (median) of FORTAX is 48.32 (42.00) percent, while the mean (median) of USTAX is 33.49 (35.17) percent. We expect PVI to be negatively influence by FORTAX and positive influenced by USTAX.

In the final sample (n = 159), property rights ranks are 1, 2, 3, and 4. One way to make this measure operational is to construct 0 - 1 indicator variables for 3 of the ranks. Another is to combine, say, ranks 1 and 2, representing relatively certain environments, and ranks 3 and 4, corresponding to ambiguous environments, and form a single indicator variable equal to 1 if rank 1 or 2, and equal to 0 if rank 3 or 4. Of course, other combinations are possible, but all these methods suffer a loss in efficiency relative to a transformation such as that offered by Terza (1987).

If the untransformed measure were cardinal then we could legitimately include it directly in the model as a single variable having 4 possible values. Since this is not the case, we apply the transformation of Terza (1987). For convenience, we adopt his notation. The model of PVI (y) is given in (1):

$Y_t = X_t\beta + \sigma_{yq}$

Where β =(K+1) x 1 vector of coefficients;

X = 1x(K+1) vector of explanatory variables AMOUNT, σ, LEVERAGE, FORTAX, and USTAX and 1 for the intercept;

σ_{yq} = coefficient for the transformed rights variable for observation t; and

υ_t^* = random error term = $\upsilon_t - \sigma_{yq}$ (- Φ_t) and Φ_t is the unobservable rights variable.

The transformed rights variable is determined as follows (for details, please refer to Terza (1987), pp. 276-279). Let $p_1, p_2, \ldots, p_{j-1} = p_1, p_2, p_3$ represent the percentage of sample observations observed in ranks 1,2 and 3. Then solve for the vector $\hat{\theta}$, where

$$\begin{bmatrix} N^{-1}(p_1) \\ N^{-1}(p_2) \\ N^{-1}(p_3) \end{bmatrix}$$

and N^{-1} is the inverse of the standard normal cdf.

Then let $P_j = N_j - N_{j-1}$, where $N_j = N(\theta_j)$ = cumulative standard normal cdf; i.e., refer the elements of $\hat{\theta}$ in (2) to the standard normal cdf to produce p_1 p_2 p_3 and p_4. Then let

$$\Phi j = (n_{j-1} - n_j)/p_j \qquad , j = 1. \ldots, 4,$$

Where n_j = standard normal pdf $n_0 = 0(\infty) = 0$. For our data set, we find, ϕ^j, $j = 1, \ldots, 4 = -71699, 48182, 1.18115$, and 2.00701. Thus firms investing in countries with property rights rank 1 will have RIGHTS = -71699, and so on. Accordingly, a negative coefficient σ_{yq} in equation (1) will be consistent with an argument such as that of Mahajan (1990).

C.2 Results

In Table 2, we present estimation results for the full model in equation (1) as well as 3 subsets. For the full model in column (1), the coefficient estimates for the RIGHTS variable (calculated as in Terza 1987) is negative (-2.499) and significant at the .01 level (t = - 2.639) supporting the hypothesis that property rights ambiguity is punished by the stock market. Note that the t-statistics in Table 2 are not ordinary least squares (OLS) statistics. The are from the estimated asymptotic covariance matrix from p.80 in Terza (1987). The consistency of the estimated coefficients is shown in his Appendix.

It is interesting to note that none of the explanatory variables apart from RIGHTS is significant. LEVERAGE and σ enter with the correct sign but are not significant at acceptable levels. In column (3) of Table 2, we suppress the tax variables and the same finding continues. RIGHTS enters the model with a significant negative coefficient estimate (t = -2663).

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Table 2
Results of estimating the model:

$$Y_2 = Y_1 = X_t\beta + \sigma_{yq} \quad \upsilon^*_t$$

where y, dollar change in equity value per dollar invested; X = vector of explanatory variables for firm t; estimated level of property rights ambiguity from Terza's (I 987) method; β and σ_{yq} = regression coefficients; and υ^*_t = random error.

Variables	(1)	(2)	(3)	(4)
Constant	-6,200	2,437	2.530	0.5
	(-0,469)	(1.070)	(1.312)	(-0.764)
$\hat{\theta}$ RIGHTS	*-2,499*	-2.306	-2.322	-2.132
	(-2.693)	(-2.663)	(-2.700)	(-2.557)
AMOUNT	0.198	0.453		
	(0.087)	(0.202)		
σ	-90.524	-93.052	-94.817	
	(-0.909)	(-0.941)	(-0.965)	
LEVERAGE	-3.410	-2.251	-2.202	
	(-0.675)	(-0.458)	(-0.449)	
FORTAX	3.016			
	(1.064)			
USTAX	22.130			
	(0.555)			
R^2	0.0550	0.0461	0.0458	0.0400

(AMOUNT) with essentially no charge in findings, and in column (4), we include only RIGHTS and the coefficient estimate continues negative (-2.132) and significant (t = 2.557). The model has R^2 values ranging from .0400 to .0550.

From the analysis up to this point, it appears that the stock market reacts negatively to ambiguous property rights and, moreover, that feature of investment dominates. We also estimate equation (1) with

the RIGHTS variable formed using indicator variables according to various combinations; i.e., RIGHTS = 1 if rank 1 and 0 otherwise; RIGHTS = 1 if rank 1 0r 2 and 0 otherwise; and $RIGHTS_j$ = 1 if rank j and 0 otherwise, where j = 1, 2, 3. In every case, the results are qualitatively the same but with lower explanatory power. For example, with RIGHTS

Defined as 1 if rank 1 0r 2 and 0 otherwise, the OLS t-statistic is 2.029 for the full model; i.e., investment in ranks 1 and 2 results in a higher stock price reaction (PVI) None of the other coefficient estimates are significant and R^2 is .0361 (compare .0550 for the full model using the RIGHTS variable from Terza 1987).

The measure PVI represents the dollar price reaction per dollar invested, which we argue is an appropriate measure. To check the robustness of our findings, we estimate equation (1) using the 2-day abnormal return as the dependent variable. For the full model, we find that RIGHTS as measured in Terza (1987) has a negative coefficient estimate and is marginally significant (t = -1.600). Using RIGHTS - 1 if rank 1 and 0 otherwise, we find as predicted a positive coefficient estimate and it is significant (t=2.110). However, for a RIGHTS = 1 if rank 1 or 2 and 0 otherwise, the coefficient estimate is positive but not significant (t = .880). In all cases using the abnormal return as the measure of the wealth effect, none of the other explanatory variables is significant.

4. Conclusions

Stock price reactions as measured by two-day cumulative abnormal returns are significantly higher on average for foreign direct investment in countries with the least ambiguity in property rights. The difference is even more striking when investment scale is taken in account by forming the familiar present value index (PVI); i.e., the dollar price reaction per dollar invested. The mean PVI for investments in strong property rights environments is over 1.6, implying positive average net present value (NPV) assessed by the market. The story is quite the opposite for countries with less well-defined property rights; mean PVI is .734, implying negative NPV.

We estimate a linear model of the market price reaction including measures of risk, size, leverage, taxes, and the level of ambiguity in property rights enforcement. The latter measure is adapted from the ranks assigned to various countries by the Heritage Foundation in their

annual *Index of Economic Freedom*. We apply various methods of coding the property rights rank and essentially all result in the finding that property rights ambiguity is punished by the market. Moreover, none of the other variables, including risk, leverage, size and taxes, explains a significant amount of variation in the market's reaction to capital investment decisions.

The role of ambiguity in property rights in the stock market's response to offshore investment in consistent with the notion that potential expropriation by the host country is taken into account. This is the central argument made by Mahajan (1990) who argues that offshore investment decisions entails short call option which should be evaluated in the capital investment decision.

APPENDIX
Excerpt from 1997 Index of Economic Freedom by The Heritage Foundation and The Wall Street Journal

Factor #8: Property Rights

The accumulation of private property is the main motivating force in the market economy. The rule of law is vital to a fully functioning, efficient market economy. This factor examines the extent to which private property is protected by the government and how safe it is from expropriation. The less protection private property receives, the higher the score and the lower the economic freedom.

Methodology: the degree to which private property is a guaranteed right is measures. So, too, is the extent to which the government protects and enforces laws to protect private property. The probability that the state will expropriate private property also is examined. This factor also takes into account the country's court and legal system. The less legal protection of private property, the higher the score. The higher the chance of government expropriation of private property, the higher the score.

Score	Protection of Private Property	Criteria
1.	Very high	Private property guaranteed by the government, and efficient court system enforces contracts. Adequate justice system to punish those who unlawfully confiscate private property. Expropriation not likely.
2.	High	Private property guaranteed by the government, but enforcement is lax. Expropriation unlikely.
3.	Moderate	Government recognizes some private property rights, such as land, but property can be nationalized. Expropriation possible.
4.	Low	Property ownership is limited to personal items with little legal protection. Communal property is the rule. Expropriation is likely, and the government does not protect private property adequately. The legal system has collapsed.
5	Nonexistent	Private property is outlawed. Everything belongs to the people of the state. Expropriation is certain, or the country is so corrupt and chaotic that private property protection is non-existent.

Endnotes

1. This requirement excludes several types of announcements. Security price reactions to international mergers have been shown to depend on characteristics of both bidder and target (Morck and Yeung, 1992). Data constraints regarding parties in countries with few reporting requirements make the analysis of such merger data difficult.

2. The authors are grateful for the cooperation extended by Mr. Ray Mataloni in furnishing this source.

References

Coase, R. (1960). The problem of social cost, *Journal of Law and Economics* 3, 1-44.

Efron, B. (1979). Bootstrap methods, another look at the jackknife, *Annals of Statistics* 7, 1-26.

English, P. (1998). International security valuation and the discontinuity in property rights, Dissertation, University of South Carolina.

Galai, D., & Masulis, R. W. (1976). The option pricing model and the risk factor of stock, *Journal of Financial Economics* 3, 53-8 1.

Gleason, K.C., Mathur, J., & Mathur, K. (1999). Shareholders' gains from corporate expansion to the republics of the former Soviet Union, *Financial Management* (Spring), 61-74.

LaPorta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1997). Legal determinants of extemal finance, *Journal of Finance* 52 (July), 11 31-1150.

LaPorta, R., Lopez-de-Silanes F., Shleifer, A., & Vishny, R. (1998). The quality of Government, National Bureau of Economic Research Working Paper, #W6727.

LaPorta, R., Lopez-de-Silanes, F., & Shleifer, A. (1999). Corporate ownership around the world, *Journal of Finance* 54 (April), 471-517.

Mahajan, A. (1990). Pricing expropriation risk, *Financial Management* 19, 77-86.

McConnell, J. J., & Muscarella, C. J. (1985). Corporate-capital expenditure decisions and the market value of the firm, *Journal of Financial Economics* 14, 399-422.

Terza, J. V. (1987). Estimating linear models with ordinal qualitative regressors, *Journal of Econometrics* 34, 275-291.

White, H. (1980). A heteroskedasticity-consistent covariance matrix and a'direct test for Heteroskedasticity, *Econometrica* 48, 721-746.