Currency appreciation shocks and shareholder wealth creation in cross-border mergers and acquisitions*

Chen Lin
University of Hong Kong
chenlin1@hku.hk

Micah S. Officer
Loyola Marymount University
micah.officer@lmu.edu

Beibei Shen
Chinese University of Hong Kong
beibei@baf.msmail.cuhk.edu.hk

September 2014

Abstract

Using a comprehensive sample of cross-border mergers, we find that acquirers from countries experiencing large currency appreciations realize higher abnormal announcement stock returns during both the announcement period and the post-merger period. Importantly, this shareholder wealth creation effect mainly comes from those acquirers in countries with strong shareholder rights and those acquirers with better corporate governance. We further find that acquirers from countries with weak shareholder rights tend to overpay a foreign target following a currency appreciation. Collectively, this evidence suggests that the interaction of currency appreciation and agency conflicts plays an important role in acquirer shareholder value creation.

JEL classification: G34; F31

Keywords: Cross-border mergers and acquisitions; Currency appreciation; Investor protection; Corporate governance; Shareholder wealth

* We thank Daniel Berkowitz, Patrick Bolton, Michael Devereux, Espen Eckbo, Hanming Fang, Jarrad Harford, Harald Hau, Ross Levine, Gustova Manso, Pedro Matos, Richard Roll, Henri Servaes, Karin Thorburn and seminar participants at the Third ECCCS Workshop on Governance and Corporate Control, the 2014 China International Conference in Finance, the University of Melbourne, University of Delaware, City University London and Queen's University for helpful comments and discussions. We thank Pennie Wong for research assistance. Lin gratefully acknowledges the financial support from the University of Hong Kong and the Research Grants Council of Hong Kong (Project No. T31/717/12R).

1. Introduction

According to data from SDC platinum, the aggregate dollar volume of cross-border acquisitions increased from 21% of total dollar merger volume worldwide in 1996 to 36% in 2010. This highlights a trend that more and more mergers and acquisitions (M&As) involve acquirers and targets from two different countries. Despite the massive volume of cross-border mergers and acquisitions, much of the existing M&A literature focuses on domestic U.S. deals. While some of the determinants and consequences of M&As are common to both U.S.-only and cross-border deals, many important country-level differences between acquirers and targets are not considered in the majority of the existing M&A literature (Erel, Liao, and Weisbach, 2012).

One of these country-level differences (that is not relevant in studies of domestic U.S. takeovers) is the exchange rate between the currencies of the acquirer and target countries. In a recent study of 48 countries over an 18-year period, Erel, Liao, and Weisbach (2012) find that changes in exchange rates play an important role in motivating cross-border acquisitions. The popular press also recognizes that a strong currency is a crucial contributor to the ability of a firm to expand internationally. For example, the appreciation of the renminbi (aka yuan, or RMB) over the past decade has spurred a lot of Chinese companies to shop for acquisition targets internationally.[1]

Just as Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004) propose a stock market misvaluation theory suggesting that overvalued acquiring firms can create gains for shareholders by using their expensive stock to purchase less overvalued targets, it is possible that a strongly appreciated currency allows an acquirer to create value for their shareholders by acquiring targets in countries with weaker currencies. Taking advantage of currency movements and paying foreign firms with inflated currency could lead to a profitable investment for the

[1] "The expected appreciation of the yuan will fuel foreign deals by making them relatively cheaper (just as a strong yen did in Japan's heyday in the 1980s)," The Economist, April 29 2010. Another Economist article (November 11, 2010), noted that "Chinese buyers have accounted for a tenth of cross-border deals by value this year, bidding for everything from American gas and Brazilian electricity grids to a Swedish car company, Volvo".

acquiring firm. This is particularly true if the deal participants believe the currency movements to be temporary. In such cases, as Erel, Liao, and Weisbach (2012) point out (p.1049), "cross-border acquisitions effectively arbitrage these differences, leading to expected profits for the acquirers." From this perspective, appreciation-motived acquisitions will create wealth for the shareholders of the acquiring firm as long as the acquirer is able to lock in the pre-merger relative currency advantage.

Even if exchange rate changes are permanent, however, acquiring firms could still create additional value through cross-border mergers and acquisitions (Froot and Stein, 1991; Kang, 1993; Erel, Liao, and Weisbach, 2012). First, currency depreciation lowers the relative production costs of domestic firms and encourages them to adopt more aggressive pricing and production strategies to compete with foreign competitors and gain market share. Therefore, following a currency depreciation, domestic firms tend to have higher growth rates and expected profits, making them potentially good targets to acquire (Erel, Liao, and Weisbach, 2012). Second, as Froot and Stein (1991) point out, information asymmetries in cross border mergers and acquisitions make external financing more expensive than internal financing in these deals. Exchange rate appreciation increases the relative net wealth (i.e. available internal financing) firms can invest in these "information-intensive" investments, and as a consequence, lowers the acquirer's cost of capital (Froot and Stein, 1991; Kang, 1993; Erel, Liao, and Weisbach, 2012). Taken together, both these channels suggest that currency movements enable cross border acquisitions to create value either through higher expected earnings or lower cost of capital. The implication is that acquisitions following *either* permanent *or* temporary substantial exchange rate changes have the potential to create value for acquiring firms.

The existing literature provides mixed conclusions about the value implications of stock overvaluation-driven M&A deals (Moeller, Schlingemann, and Stulz, 2005; Savor and Lu, 2009; Fu, Lin, and Officer, 2013). Agency conflicts between managers and shareholders imply that such acquisitions are not necessarily in the best interests of acquirer shareholders. Just as an

overvalued stock price might exacerbate agency conflicts (Fu, Lin, and Officer, 2013; Jensen, 2005), an overvalued currency might aggravate empire building, or other agency problems. This is at least partly because acquirer managers can use currency appreciation as an excuse to engage in a larger number of cross-border acquisitions to build their empire and extract private benefits.[2]

If empire building incentives and other agency costs play an important role in currency appreciation-driven M&A decisions, managers may rush into completing deals with high premiums in order to lock in the potential benefits, without selecting a proper target or making a reasonable estimate of its value. This might offset the benefit from the currency appreciation-driven M&A decision. Furthermore, the nature of cross-border acquisitions might aggravate this concern. When acquisitions take place beyond the boundaries of the acquirer country, it is more difficult for acquirer firms to manage foreign companies because of geographic distance, cultural differences, or lack of local industry expertise: this suggests lower synergy gains in the post-acquisition period (Ahern, Daminelli, and Fracassi, 2012). Therefore, the benefits to acquirer shareholders from exploiting a strong home currency are an empirical issue.

Although extant evidence suggests that the strength of a country's currency is positively related to the likelihood of its companies expanding abroad (e.g., Erel, Liao, and Weisbach, 2012), we still know very little about the *value* consequences of these foreign deals. In this paper, we attempt to fill this gap in the literature by examining whether cross-border mergers create wealth for acquiring firms' shareholders, especially those acquisitions motivated by changes in exchange rates.

We define a cross-border merger as a "large currency appreciation" deal if the difference in the appreciation of the acquirer's (U.S. dollar) real exchange rate relative to the target's during

[2] Extant literature has demonstrated that agency conflicts between managers and shareholders lead to value-decreasing mergers (e.g., Jensen, 1986). Managers can make value-destroying acquisitions to extract large private benefits through empire-building and higher compensation levels (Bliss and Rosen, 2001; Grinstein and Hribar, 2004; Harford and Li, 2007). These private benefits represent the potential for self-interested managers to expropriate wealth from shareholders.

the one year prior to the M&A announcement is one standard deviation above the sample average. Using a large sample of cross-border acquisitions occurring between 1996 and 2012, we provide strong evidence that acquirers in large currency appreciation deals make cross-border acquisitions that significantly *increase* shareholder wealth. Specifically, large currency appreciation deals are associated with 0.6 percentage points higher abnormal announcement returns (acquirer's five-day CAR), and the effect of large currency appreciations on acquirer returns is both statistically and economically significant. The effect of large currency appreciations on acquirer announcement returns is robust to a number of different empirical specifications and sample restrictions, and is consistent with positive valuation effects associated with the exploitation of overvalued currencies.

If weak legal protection facilitates the extraction of private benefits, it follows that the positive link between large currency appreciation deals and acquirer abnormal returns should be weaker when agency problems are more severe. To disentangle these effects, we examine the relation between large currency appreciation and acquirer shareholder value conditional on proxies for agency problems. To do so, we interact country-level measures of investor protection with our large currency appreciation indicator variable. We employ several proxies for the quality of country governance: an anti-self dealing index, an anti-director rights index, a shareholder protection index (combines minority shareholder rights and the enforcement of these rights), and a WGI (worldwide governance indicators) index.

Our findings show that the wealth effects of engaging in large currency appreciation deals for acquirer shareholders are concentrated in cases where acquirers are from countries with stronger shareholder protection. Large currency appreciation deals generate around 0.4 - 0.8 percentage points higher abnormal announcement returns if the acquirer country's investor protection index increases by one standard deviation, while the effect of currency overvaluation on acquirer returns in countries with weak governance is much weaker (or even negative). These results support the predictions of the agency argument, that currency overvaluation can generate

gains for acquirer shareholders but only if the governance regime discourages abuse by the firm's managers.

Ideally, we would like to have firm-level measures of corporate governance to test the interaction with currency appreciation. Therefore, we look at cross-border mergers conducted by U.S. firms and test whether the wealth creation in appreciation-driven acquisitions disappears for firms with weak corporate governance. We consider two measures of firm-level governance that are commonly used in the literature: institutional ownership and product market competition. Again, the positive relation between acquirer returns and currency appreciation appears unique to firms with higher quality governance, who appear better able to pass the acquisition-related benefits of a strong U.S. dollar on to their shareholders. For U.S. acquirers with good governance, purchasing a foreign firm following a large currency appreciation is associated with 1.6 - 1.7 percentage points higher announcement abnormal returns (versus zero to negative incremental appreciation-driven returns for those with weak governance). This U.S. evidence sheds additional light on the agency argument; that is, poor corporate governance stifles the potential value-creating investment motived by exchange rate appreciation.

To better understand why acquirers with strong shareholder protection experience significantly higher acquisition announcement returns from deals following currency appreciation, we next explore two channels affecting wealth creation. Currency appreciation is not a sufficient condition for value creation for acquirer shareholders: as in Fu, Lin, and Officer (2013), overvaluation of the acquirer's currency can be undermined by the premium paid to the target firm (i.e., paying too much) or the synergies generated from the deal (i.e., getting too little).

We first examine how corporate governance affects the premium. We conjecture that the takeover premium paid to the target firm will be high when the acquiring firm has weak governance, which could erode most of the gains that would otherwise accrue to acquirer shareholders in large currency appreciation deals. The empirical findings, consistent with our

conjecture, show that large currency appreciations are associated with an increase in takeover premiums of about 13 - 20 percentage points for acquirers from countries with weaker shareholder rights (relative to all other deals). This suggests that acquirers in countries with poor investor protection tend to overpay their targets when undertaking M&A deals following large currency appreciations. As a result, acquirer shareholder value creation is also lower for such firms.

Furthermore, we ask whether poor governance drives acquirers from countries with overvalued currencies to engage in deals with lower synergies. To the extent that long-term abnormal returns reflect the synergies from the deal, we use the Buy and Hold Abnormal Return (BHAR) approach to calculate long-term abnormal performance and test whether acquisitions driven by large currency appreciation serve the interests of long-term shareholders. We find that acquirers consummating transactions following large appreciations outperform other acquirers in a statistically significant and economically meaningful way. More specifically, following large currency appreciation deals acquirers experience an 11.6 percentage point increase in three-year buy-and-hold abnormal returns compared to all other acquirers. Further evidence shows that this effect is attributable to acquirers from countries with strong shareholder rights, suggesting that acquirers from countries with weaker shareholder rights make poor choices of targets, and any synergies associated with these deals might be so negative as to offset any benefit from currency appreciation-induced acquisitions.

Our paper makes several contributions to the literature. First, we contribute to a growing line of research that studies cross-border acquisitions (Rossi and Volpin, 2004; Bris and Cabolis, 2008; Chari, Ouiment, and Tesae, 2009; Ahern, Daminelli, and Fracassi, 2012; Erel, Liao, and Weisbach, 2012; Dinc and Erel, 2013; Karolyi and Taboada, 2014).[3] Most of these papers focus primarily on the determinants of cross-border takeover activity. Our paper contributes to this

[3] This paper also fits within a broader literature about the relation between exchange rate movements and foreign direct investment (FDI: Froot and Stein, 1991; Blonigen, 1997).

literature by showing that firms can create substantial value for their shareholders, both in the short-term and in the long run, through buying a foreign target from a country with a relatively weak currency. It is notable that in a comparison between domestic deals and cross-border deals by U.S. acquirers, Moeller and Schlingemann (2005) explore whether the link between cross-border deals and CARs is influenced by a strong U.S. dollar and find no significant results. In our study, we focus on cross border deals and analyze a much larger and broader sample (around 1,000 country-pairs), which allows us to conduct a more systematic and comprehensive study of the effect on acquirer shareholder wealth in large currency appreciation deals. In this regard, to our knowledge, ours is one of the first studies of the effect of large currency appreciations on cross-border acquisition outcomes based on a comprehensive sample.

Second, our work adds to the literature on the agency motive in mergers and acquisitions (e.g. Masulis, Wang, and Xie, 2007; Lin, Officer, and Zou, 2011; Harford, Humphery-Jenner, and Powell, 2012). The existing literature typically focuses on domestic deals by U.S. firms. Distinct from prior research, we present evidence that agency problems are also relevant in cross-border acquisitions, and hinder wealth creation. Our findings highlight the importance of investor protection or corporate governance in creating value for shareholders. More importantly, we show that both country- and firm-level governance proxies matter for wealth creation associated with large currency appreciation deals. Third, our paper also sheds light on how firms respond to exchange rate shocks in making investment decisions. In this regard, we highlight an important channel (using inflated currency to buy foreign targets) that affects firm value.

The remainder of this paper is organized as follows. In Section 2, we describe our data and explain how we construct our key variables. In Section 3, we present and discuss the empirical results. We conclude the paper in Section 4.

2. Data and summary statistics

2.1. Sample of cross-border mergers and acquisitions

Our cross-border merger sample is taken from the Securities Data Company (SDC) Mergers and Acquisitions database, and includes all completed acquisitions announced between 1996 and 2012 in which the acquirer and target are designated as being from different countries. The acquirer in our sample must be a publicly traded company with common stock data available on Datastream or CRSP. We place no restrictions on the public status of the target, which means targets in our sample include private firms, public firms, and subsidiaries.[4] We exclude leveraged buyouts, spinoffs, recapitalizations, self-tenders, exchange offers, repurchases, acquisitions of remaining interest, partial equity stake purchases, privatizations, and transactions for which the deal value is undisclosed. We require the deal value disclosed in SDC to be at least $1 million, and we also exclude acquirers in the financial services industry (one-digit SIC of 6). We consider only deals in which the acquirer gains control over the target firm (i.e., acquires more than 50% of the target). The resulting cross-border M&A sample includes 12,030 completed transactions by 5,362 unique acquirers. Table 1 defines the variables we use in this paper.

[Insert Table 1 here]

Our sample is diversified geographically, as acquirer and target companies come from 62 different countries. The Appendix shows the distribution of the sample across country pairs. Specifically, it presents the number of cross-border deals for each pair of acquirer country (rows)

[4] Different from the existing literature on *equity* (as opposed to currency) misvaluation (e.g. Fu, Lin, and Officer, 2013), we do not restrict our sample to deals only involving public targets. Because our "overvaluation" measure is based on country-level exchange rate differences, we do not need stock price data to measure target misevaluation (as do many other studies). In addition, our paper primarily focuses on how large currency appreciations affect *acquirer* shareholder value.

and target country (columns). In the matrix, we also report the total number of cross-border mergers from (acquirer) and to (target) a particular country in the right column and the bottom row (respectively). With respect to acquirer nations, the United States accounts for the highest representation (2,926 deals, about 24% of the sample). The other top acquirer countries in terms of sample representation are the United Kingdom (21%), Canada (9%), France (4.5%), and Australia (4%). With respect to target nations, the top five countries are the U.S. (25%), the U.K. (12%), Canada (7%), Germany (6%), and France (5%).

2.2. Dependent variables: Acquirer abnormal returns and acquisition premiums

To measure the wealth effect for acquirer shareholders, we first calculate acquirer abnormal returns around the acquisition announcement dates. We take stock price data from Datastream for non-U.S. firms and from CRSP for U.S. companies. We also take national exchange rates from Datastream. Following the literature (e.g. Bris and Cabolis, 2008), all returns are denominated in U.S. dollars. The "dollar-denominated daily return" is

$$R_{i,t} = \frac{[P_{i,t} X(\$/i)_t]}{[P_{i,t-1} X(\$/i)_{t-1}]} - 1 \qquad (1)$$

Where P is the local currency price and $X(\$/i)_t$ is the spot exchange rate (dollars per local currency) on day t.

Abnormal returns are estimated using the two-factor international market model (e.g. Bris and Cabolis, 2008). The two factors are the local market return and the world market return. We use the broadest equity market index available for each country to proxy for the local market

return and the MSCI world index to proxy for the world market return. The market model regressions are:

$$R_{ijt} = \alpha_i + \beta_i^m R_{mjt} + \beta_i^w R_{wt} + \in_{it} \quad (2)$$

Where R_{ijt} is the daily stock return for firm i in country j, R_{mjt} is the local market return in country j and R_{wt} is the world market return.[5] The model is estimated using 200 trading days of returns data from event day -210 to event day -11. We then compute five-day cumulative abnormal returns (CARs) during the event window (−2, +2), where event day 0 is the acquisition announcement date.

Since we are also interested in post-merger performance, we next construct long-term abnormal returns for acquirer shareholders. Following the recent literature (e.g. Fu et al., 2013), we compute long-run abnormal returns using market-adjusted buy-and-hold returns. Specifically, we define the acquirer firm's BHAR (buy-and-hold abnormal return) as

$$BHAR_i[0,H] = \prod_{t=0}^{H}\left(1 + R_{i,t}\right) - \prod_{t=0}^{H}(1 + R_{m,t}) \quad (3)$$

Where t=0 is the acquisition announcement date; H is the holding period; $R_{i,t}$ is the daily stock return for firm i; $R_{m,t}$ is the local market return in firm i's country. We use the first 250, 500, and 750 trading days after the announcement to proxy for 1-year, 2-year and 3-year holding periods, respectively. To isolate the direct effect of acquisition events, when we compute long-

[5] Our results are robust to the inclusion in the market model of the daily lead and lag of the world market return, to control for non-synchronous trading (e.g., Asia is open for trading before Europe is, which is open before America is).

term acquirer stock returns we exclude firms with multiple acquisition events in the return measurement window (1-year, 2-year, or 3-year periods).

For cross-border mergers involving a publicly traded target (about 11% of our sample), we are able to obtain the acquisition premium from SDC, defined as the ratio of the offer price to the target's stock price four weeks before the merger announcement minus one.

Table 2 presents summary statistics for the 12,030 completed cross-border mergers and acquisitions during our sample period (1996 - 2012). Across all of the cross-border deals, the average five-day CAR is 1.31%. Different from previous research on domestic deals, cross-border acquisitions seem to be a value-enhancing investment for acquirer shareholders on average. For the 988 acquisitions of a public target for which we can measure the premium, the mean four-week premiums are 48.5%, which is quite similar to the average premiums documented in the extant literature about domestic U.S. acquisitions.

[Insert Table 2 here]

2.3. Key independent variable: Large currency appreciation

To construct the currency appreciation measure, we obtain national exchange rates and inflation data from Datastream. For each cross-border deal in our sample, we calculate the U.S. dollar exchange rate return for the one year prior to the announcement date for the acquirer country and the target country. We use the consumer price index (CPI) in each country to convert all nominal exchange rate returns to real exchange rate returns for the acquirer and target countries. We then take the difference between real exchange rate returns between acquirer and target firms, and label this variable "Exchange rate return [A-T]_1y". As can be seen in Table 2, this measure has an average of approximately zero, implying that across all 12,000+ deals in our

sample the exchange rates between the acquirer and target countries change relatively little on average in the year prior to a deal being announced.

However, this measure has a standard deviation of approximately 0.1. Our key independent variable, which we label "large currency appreciation", is an indicator variable equal to one if the difference in real exchange rate returns described above is greater than one standard deviation (10%) above the sample mean (of roughly 0%). Otherwise, the variable labeled "large currency appreciation" is set equal to zero. By this definition, 12.7% of the acquisitions in our sample are classified as large currency appreciation deals. The remaining deals involve either modest currency appreciation or currency depreciation (acquirer country relative to target country). [6]

2.4. Governance variables: country- and firm-level

Agency theory posits that the separation of ownership and control causes managers to have discretion to serve their own interests at the expense of shareholders. When corporate governance works well, managers find it optimal to maximize shareholder value rather than extracting private benefits. In this case, acquisitions are likely to benefit shareholders and create value for them. However, with poor governance and imperfect monitoring, managers could derive substantial personal benefits from engaging in acquisitions, which would reduce shareholder wealth. Therefore, we expect the value implications of large currency appreciation M&A deals to be different for firms with different governance structures and exposed to different governance regimes.

As Shleifer and Vishny (1997) point out, legal protection of investor rights is one of the most fundamental aspects of corporate governance. We therefore use four measures of shareholder protection to proxy for country-level governance. Our first variable is the Anti-self

[6] We also attempted to explore the impact of large currency *depreciation* on short-term and long-term abnormal returns, but find that currency depreciation does not exert significant impact on acquirers' shareholder value.

dealing index, established by Djankov et al. (2008).[7] This index measures the legal protection of minority shareholders against private control and self-dealing by corporate insiders. The index is constructed based on the survey response by attorneys from Lex Mundi law firms in 102 countries to a description of a hypothetical self-dealing case (as in Djankov et al., 2008). Higher values indicate better protection of investors against self-dealing by controlling shareholders.

Our second variable is the Anti-director rights index, also from Djankov et al. (2008) (which uses a revised estimate of the index originally defined by La Porta et al., 1998). This index takes values from one to six, where countries with higher values are those with higher quality of institutions that support minority investors' rights. Specifically, the anti-director index is formed by adding one when: (1) shareholders can appoint a proxy to vote on their behalf at the shareholders' meeting; (2) shareholders are not required to deposit their shares with the company or a financial intermediary before casting votes at any general shareholders' meeting; (3) the law explicitly mandates the cumulative voting or proportional representation of minorities (i.e. shareholders owning 10% or less of the capital) in the board of directors; (4) minority shareholders have legal mechanisms against oppressive, abusive, or prejudicial resolutions by the board of directors or controlling shareholders; (5) shareholders have preemptive rights to buy new issues of stock; or (6) the minimum percentage of share capital that entitles a shareholder to call a shareholders' meeting is less than or equal to 10%.

These two variables mainly reflect how legal rules protect shareholder rights. However, the quality of *enforcement* also plays an important role in investor protection (La Porta et al., 1998). If enforcement is poor in a country, it would be difficult for minority shareholders to make use of their formal rights. Therefore, we consider a third measure of investor protection that combines legal rules and the quality of legal enforcement. This variable (called "Shareholder protection index") is computed as the product of the anti-director rights index and the rule of law index

[7] Data for all the country-level investor protection (or governance) measures used in this paper are available on Andrei Shleifer's website: http://scholar.harvard.edu/shleifer/publications.

(from La Porta et al., 1998), and measures the extent to which the legal rights exist *and* are enforced in a country.

All three of these country-level governance variables are time-invariant. Therefore we introduce another country-level measure that has time-varying data on governance characteristics. Specifically, we use world governance indicators (WGI) developed by Kaufmann et al. (2009). This index consists of six aspects: voice and accountability; political stability and absence of violence/terrorism; government effectiveness; regulatory quality; rule of law, and control of corruption. For each indicator, the value ranges from -2.5 to 2.5. Higher values indicate better country governance or higher quality of institutions. We use the sum of all six Kaufmann et al. (2009) worldwide governance indicators as our forth country-level governance proxy.

Legal protection alone may not be sufficient to ensure adequate protection of shareholder rights. Even in countries with well-functioning legal systems (e.g., the United States), managers still have considerable discretion to pursue self-interested behavior. Therefore, we also consider several firm-level corporate governance mechanisms. In terms of firm-level governance, we focus on single country (the U.S.) where we have data on governance proxies. The variables we use are institutional ownership and proxies for product market competition. We describe the definitions of these variables in detail in Section 3.3.

2.5. Firm-, deal-, and country-level control variables

We consider three categories of control variables from the M&A literature employing regressions explaining acquirer abnormal announcement returns (e.g., Masulis, Wang, and Xie, 2007): firm-level characteristics, deal-level characteristics, and country-level characteristics.

We use Worldscope to collect accounting data for the acquiring firm. The acquirer characteristics that we control for are size (book value of total assets in U.S. dollars), cash flow

(funds from operations divided by total assets), Tobin's Q (market value of total assets divided by book value of total assets), and leverage (total debt divided by total assets), all of which are measured at the fiscal year-end immediately prior to the acquisition announcement. We also control for the acquirer's pre-announcement market-adjusted stock price runup, which is measured over the 200-day window from event day –210 to event day –11. As can be seen in Table 2, the average stock price runup for acquiring firms in our sample is 14.1%, which is similar to the averages reported in extant studies of domestic acquisitions.

We obtain deal-level characteristics from SDC. The deal characteristics that we control for include industry relatedness of the acquirer and target, target ownership status, method of payment, relative deal size, whether the deal attitude is friendly, and whether an acquisition is a tender offer. We classify a deal as unrelated if the acquirer and the target do not have the same two-digit SIC industry. We use indicator variables for the various categories of target public status (public, private, and subsidiary) and an indicator variable for all-cash deals (equals one for acquisitions financed completely with cash). Relative deal size is defined as the ratio of transaction value to the acquirer's market value of equity measured on the 11th trading day prior to the announcement date.

As shown in Table 2, the average deal value is 32% of the acquiring firm's pre-acquisition market capitalization. About 42% of cross-border deals in our sample are between acquirers and targets in the different two-digit SIC industry (unrelated, or diversifying). The fraction of public, private and subsidiary targets is not evenly distributed for cross-border mergers. Almost half (49.6%) of the deals involve a private target.[8] In contract, acquisitions of public firms only account for a little over one-tenth of the deals. In our sample, about one-third of the deals are financed exclusively with cash and almost all deals are friendly.

[8] According to Erel, Liao, and Weisbach (2012), 97% of the deals in their cross-border sample involve a private firm as either acquirer or target.

Country-level characteristics are taken from the World Bank's World Development Indicators (WDI) dataset. We use gross domestic product (GDP) per capita to proxy for the level of economic development and the annual growth rate of GDP per capita to proxy for the economic growth. We also use the stock market capitalization of all publicly listed companies normalized by the GDP to proxy for the financial development of a country. We control for these country-specific characteristics for both acquirer and target firms. Looking at the summary statistics in Table 2, we see that the acquirer countries have greater economic development (higher GDP per capita) and stock market development (Mktcap/GDP) compared to the target countries, on average.

To minimize the effect of outliers, we winsorize all continuous variables in this paper at the 1st and 99th percentiles of their distributions. Detailed definitions of all these variables can be found in Table 1.

3. Empirical results

3.1. Large currency appreciation and acquirer announcement returns

In this section, we empirically test the wealth effects associated with acquisitions following (and potentially induced by) substantial exchange rate appreciations: firms could create value for their shareholders by using a highly valued domestic currency to purchase foreign assets denominated in a lower valued currency. Under this hypothesis, we expect large currency appreciation deals to be positively associated with cumulative abnormal returns (CARs) for acquirer shareholders.

We test our hypothesis using our comprehensive cross-border merger sample from 1996 to 2012. The dependent variable in our regressions is the acquirer's five-day CAR (-2, +2). The independent variable of interest is "large currency appreciation", which is described above (in

Section 2.3) and captures big exchange rate changes between acquirer and target countries (favoring the acquirer).[9] We control for acquirer characteristics, deal characteristics, country characteristics, and year and industry (two-digit SIC industry classification) fixed effects in the regressions. We also include acquirer country fixed effects to capture the differences in institutional environments or the possibility that investors in different countries might respond differently to acquisitions.[10]

The results from OLS regressions are presented in Table 3. In Column (1), we report estimates including all deals and find that the coefficient on large currency appreciation is positive and statistically significant at the 1% level. This indicates that acquirers from countries whose currencies have experienced substantial appreciations in the recent past (relative to the target country) make cross-border acquisitions that significantly increase shareholder wealth. The effect of large currency appreciation on acquisition announcement returns is also economically significant. On average, large currency appreciation deal is associated with a 0.6 percentage point higher abnormal announcement return. This is a large effect given that the average acquirer CAR in our sample is around 1.3% (Table 2).

[Insert Table 3 here]

In Column (2), we estimate the model for the subsample of deals for which the acquirer has experienced a currency appreciation (i.e., including modest and large currency appreciation deals, but excluding currency depreciation deals). In other words, we create a sample consisting of

[9] The results reported here are robust to defining "large" currency appreciations in an asymmetric fashion for acquirers from countries with currencies that have above- and below-median volatility. Specifically, one robustness test we employ is to reduce the benchmark for defining a large currency appreciation to 5% (instead of around 10%, or one standard deviation) for currencies that have below-median in-sample volatility. Our conclusions are qualitatively unaffected by this change.

[10] Our results are robust to including *currency* fixed effects instead of country fixed effects.

acquirer currency appreciation *only*, but with different degrees of currency movements. Naturally, our sample size reduces by about 50%: we have 5,990 such observations during our sample period. Using this sample, we continue to find that the large currency appreciation variable is positively correlated with the acquirer's announcement returns in cross-border acquisitions (relative to deals with modest appreciation). The coefficient on large currency appreciation is significant at the 1% level and its magnitude is similar to what we find in Column (1).

Since U.S. acquirers account for the largest fraction of our sample, we verify that our cross-country analyses do not change if we exclude deals involving U.S. acquirers. The results are reported in Column (3). We find that the effect of large currency appreciation on acquirer returns is unchanged (positive and significant at the 1% level).[11] As another robustness check, we use weighted least squares (WLS) regression (instead of OLS) to account for the unbalanced distribution of the sample across countries. Column (4) reports the WLS regression results, where we weight each observation by (the inverse of) the total number of cross-border deals in that country. We use this method to avoid giving too much weight to countries that have a larger fraction of the number of deals in our sample, such as the U.S. and U.K. We find that our results are robust to WLS specification: the coefficient on the indicator variable for large currency appreciation deals remains positive and statistically significant at the 1% level.[12]

The coefficients on the control variables in the acquirer announcement return regressions in Table 3 are generally consistent with existing literature (e.g., Fuller, Netter and Stegemoller, 2002; Moeller, Schlingemann, and Stulz, 2004). For instance, we find that announcement returns are lower for large acquirers and higher when the deal size is larger relative to the acquirer's

[11] Our results are also robust to excluding deals involving U.K.-based acquirers.

[12] As a further robustness check, we calculate one-year exchange rate return differences between acquirer and target countries from two years before the acquisition announcement date. Large currency appreciation (-2, -1) is an indicator variable equal to one if Exchange rate return [A-T] (-2, -1) is one standard deviation above the sample average. We find that these further-away currency appreciations are not significantly associated with abnormal returns, suggesting that more-recent currency moves matter substantially more in cross-border mergers and acquisitions.

market value. We also find that acquirer pre-announcement stock price runup is significantly negatively related with acquirer announcement returns. In terms of deal characteristics, we observe that acquisitions of private or subsidiary targets are associated with significantly positive abnormal announcement returns.

3.2. Country governance characteristics and shareholder wealth effect of acquiring firms

The results in Table 3 show that the acquiring firms' shares react positively to large appreciation deals, presumably because these acquisitions tend to create more wealth for them. This finding is robust across different specifications, and is economically significant. In this section, we investigate the relation between large currency appreciation and acquirer shareholder value considering the potential for agency problems. According to agency theory, M&As might destroy shareholder value if they are motivated by managerial desires to engage in empire building or increase corporate diversification, which is more likely to enhance managers' personal utility rather than shareholder wealth.[13] Therefore, we expect that the positive link between large currency appreciation deals and acquirer abnormal returns is weaker (or even becomes negative) when agency problems are more severe.

We start by examining whether the quality of country governance influences the relation between large currency appreciation and acquirer announcement returns. We consider four proxies for the country-level investor protection: an anti-self dealing index, an anti-director rights index, a shareholder protection index, and the WGI index.

[13] Cross-border acquisitions likely increase a firm's geographical diversification, reducing firm risk to levels that might conflict with shareholder value maximization (Amihud and Lev, 1981; May, 1995). This conflict over risk exposure is driven by the fact that managers, unlike shareholders, have undiversified financial and human capital tied to the firm. Extant literature demonstrates that diversifying acquisitions generally reduce the wealth of shareholders, potentially because they are driven by managerial personal objectives (Morck, Shleifer and Vishny, 1990).

The first measure of country-level governance is the Anti-self dealing index, which comes from Djankov et al. (2008). As described above (Section 2.4), this index measures the legal protection of minority shareholders against private control and self-dealing by corporate insiders (higher values indicate better investor protection). We introduce into our regression an interaction between the large currency appreciation indicator and the acquirer country's Anti-self dealing index, and report the results in the first column of Panel A in Table 4.

The coefficient on the interaction term (Large currency appreciation * a_anti-self dealing) is positive and statistically significant. This suggests that the relation between large currency appreciation and acquirer announcement returns becomes more positive for acquirers from countries with strong shareholder protection. The interaction coefficient in Column (1) of Panel A implies that a one standard deviation increase in the anti-self dealing index is associated with about 0.6 percentage point higher abnormal announcement returns in acquisitions following large currency appreciations. On the other hand, the coefficient on the large currency appreciation indicator itself is negative and statistically significant, implying that large currency appreciations may have a *negative* effect on acquirer acquisition announcement returns when concerns in the acquirer's country about expropriation by insiders is very high (i.e., the anti-self dealing index is very low).

[Insert Table 4 here]

Our second measure of shareholder protection is also from Djankov et al. (2008), which uses a revised estimate of the Anti-director rights index of La Porta et al. (1998). In Column (2) we add the interaction between the large currency appreciation indicator and the acquirer country's Anti-director rights index (higher index values represent better legal protection for shareholders).

We again find that large currency appreciation has a significantly positive effect on acquirer announcement returns only for acquiring firms from high Anti-director rights index countries (i.e., countries with better legal protection for outside investors).

In the literature, the quality of law enforcement also affects investor protection. Therefore, we use the product of the anti-director rights index and the rule of law index (La Porta et al., 1998) as our third measure of shareholder protection. This product (which we call the "Shareholder protection index") captures the interaction of minority shareholder rights and the enforcement of these rights, and is also employed by Rossi and Volpin (2004). When we include the interaction between large currency appreciation and the acquirer country's Shareholder protection index (higher index values represent better enforcement of rights for outside shareholders) in the acquirer CAR regression, we find that the coefficient on the interaction term has a positive sign, and is statistically significant. The effect is also economically important. Ceteris paribus, as the acquirer country's Shareholder protection index increases by one standard deviation, the acquirer's five-day announcement CAR increases by 0.76 percent for in large currency appreciation deals. The result again suggests that the positive relation between large currency appreciation deals and acquirer abnormal returns becomes much stronger for acquirers located in countries with better protection of shareholder rights (i.e., high Shareholder protection index).

In addition, we use a time-variant country-level governance proxy, the worldwide governance indicators (WGI index) developed in Kaufmann et al. (2009). The WGI index measures six dimensions of governance and contains meaningful cross-country and cross-time variation. The coefficient on the interaction of this index with the large currency appreciation indicator is presented in Column (4) of Table 4. The positive effect of large currency appreciation on acquirer announcement returns is more prominent for acquirers from countries with better governance (i.e., high WGI index).

In Panel B, we estimate these same regressions for the subsample of deals for which the acquirer has experienced a currency appreciation (similar to Column (2) of Table 3). We find highly consistent evidence that the positive relation between large currency appreciation and acquirer announcement returns is significantly higher for acquirers from countries with stronger shareholder protection.[14]

Overall, the results in Tables 3 and 4 show that acquirer shareholders earn positive abnormal announcement returns from large currency appreciation deals. In particular, the positive wealth effects for acquirer shareholders from engaging in M&A deals following large exchange rate appreciations is most prevalent for acquirers located in countries with better investor protection. Ceteris paribus, large currency appreciation is related to around 0.4 - 0.8 percentage point higher abnormal announcement returns as the acquirer country's governance index increases by one standard deviation. These results are consistent with the hypothesis that managers can create value for shareholders by paying with a substantially appreciated currency to buy foreign firms. However, exploiting exchange rate changes is not a sufficient condition to benefit the shareholders of acquiring firms. The lack of effective investor protection appears to offset any benefit from appreciation-driven cross-border deals, consistent with the notion that mangers in countries with weak governance are more likely to pursue their own interests at the expense of minority shareholders.

3.3. Firm governance characteristics and gains to acquirer shareholders

Our results thus far demonstrate that cross-border acquisitions following large exchange rate appreciations create wealth for acquirer shareholders if the acquirer is from a country with stronger investor protection. To further investigate this agency argument, we consider firm-level

[14] In addition, the results reported in Table 4 are robust to the exclusion of U.S. acquirers, as in column (3) of Table 3.

proxies for corporate governance, and test whether the relation between large currency appreciation and acquirer returns is related to a firm's governance quality. Many papers in the existing literature use firm-level governance data for firms from the United States. We therefore focus on U.S. acquirers to study whether wealth creation in appreciation-driven acquisitions disappears for firms with weak corporate governance. In this section, we employ two measures of governance for acquirers in our sample from the U.S.: institutional ownership and product market competition.

Institutional investors play an important governance role in the finance literature. For example, Shleifer and Vishny (1997) suggest that institutional investors have greater incentives to monitor management and acquire firm information at lower cost, because they typically control a large block of votes. Thus, higher institutional holdings could reduce agency problems and enhance managerial effectiveness. We use the holdings by institutional investors in the acquirer's common stock (from Thomson-Reuters Institutional Holdings (13F) database) to proxy for this governance effect. We include in our regressions an indicator variable (labeled High IO) equal to one if the acquirer's institutional ownership is above the sample median (higher institutional ownership proxies for better governance), and the interaction of that variable with large currency appreciation. The results are presented in Column (1) of Table 5. Consistent with the results in Table 4, we find that large currency appreciation has a significantly positive effect on acquirer abnormal returns only for the high institutional ownership (strong governance) group of acquirers. Moreover, the economic magnitude of the coefficient is also substantial. In well-governed firms (above-median institutional holdings), large exchange rate appreciation is associated with a more than 100% increase in the measured abnormal announcement returns (relative to the unconditional average in Table 2).

[Insert Table 5 here]

Next, we consider product market competition as a governance proxy, and partition our sample based on whether the acquirer's Herfindahl-Hirschman index (HHI) is above or below sample median. We construct the HHI using the sum of squared (sales) market shares of all Compustat firms in the same three-digit SIC industry as the acquirer. Industries with lower HHI are considered to have more competitive product markets. Hart (1983) argues that product market competition has a disciplining effect on managerial behavior, and Giroud and Mueller (2010) demonstrate empirically that product market competition is a powerful mechanism for eliminating managerial inefficiency. Therefore, we add to our regressions an indicator variable (labeled Low HHI) that equals one if the acquirer's HHI is below the sample median, and the interaction of that variable with the large currency appreciation indicator. We expect that the effect of large currency appreciation on acquirer CARs will be more significantly positive for acquirers facing high competitive pressure (i.e., lower HHI). The results reported in Column (2) of Table 5 are consistent with this conjecture.

The evidence in Table 5, using a sample of U.S.-based acquirers, further confirms that acquirers with higher quality governance are better able to pass the benefits from large exchange rate gains on to their shareholders. In contrast, poor governance appears to stifle the potential for value-creation driven by exchange rate appreciation.

3.4. Robustness tests

In this section, we check the robustness of our results by making various alternative choices of the sample and test specifications. One concern about our results is the issue of selection bias in tests of M&A outcomes. In a rational (non-agency) model, only acquisitions that are expected to create value for the acquiring firm will be undertaken, which introduces a sample selection

bias. We attempt to address this selection bias using a two-stage Heckman model. In the first stage, we run a country-year probit model where the dependent variable is equal to one if the acquirer and target countries have any cross-border deals in year t, and zero otherwise. Following Ahern et al. (2012), we use bilateral investment treaties and double-taxation treaties as instruments to estimate the likelihood of cross-border acquisitions. We also include country-level characteristics (GDP per capita, GDP growth, equity market capitalization/GDP, and geographic distance) in the probit model. For each country-pair, we use the fitted value of the probit model to calculate an inverse Mill's ratio, which is our proxy for the likelihood of M&A flows between those countries (and may help control for the selection bias). As can be seen in Column (1) of Table 6, our results remain unchanged when including this inverse Mill's ratio in the abnormal return regression.

[Insert Table 6 here]

In Column (2) of Table 6, we reestimate our regression excluding cross-border deals where the acquirer and target countries share a common currency (such as the Euro). Moreover, we also try to drop country-pairs for which their currencies move very little against each other over long periods of time (such as the Hong Kong dollar – U.S. dollar). Specifically, we estimate our tests excluding deals from the sample for which Exchange rate return [A-T]_1y is less than 1% in absolute magnitude (Column (3)). The effect of large currency appreciation on acquirer announcement returns appears to be robust in both specifications.

In Column (4), we control for currency volatility. Currency volatility is defined as the standard deviation of the monthly exchange rate return between the acquirer and target countries in the three years preceding the acquisition announcement month. We find that the coefficient on

large currency appreciation is still positive and statistically significant even after including this control for currency volatility in the regression.[15] Finally, the last column of Table 6 excludes cross-border deals announced during the financial crisis / Euro crisis period, and our results are unchanged.

Next, we perform additional tests by comparing acquirer abnormal returns for cross-border deals in our sample to a sample of domestic deals. Following Bris and Cabolis (2008), we construct a matched domestic sample as follows. For each cross-border deal in our final sample (Table 3), we identify a domestic deal that meets the following criteria: (1) the acquiring company belongs to the same country as the acquiring company in the cross-border acquisition (and their target is domestic); (2) the acquiring company shares a common two-digit SIC code with the acquiring company in the cross-border deal; (3) the domestic deal is announced in the same year as the cross-border deal; (4) the acquirer is a public firm and it gains control over the target firm (i.e., acquires more than 50% of the target); and (5) the acquirer firm is the closest in size (total assets) to the acquirer firm in the cross-border deal.

[Insert Table 7 here]

We are able to find a domestic matching deal in 6,120 out of our 12,030 cross-border acquisitions, where all domestic matching deals have complete information on our control variables. This yields a sample of 12,240 acquisitions (6,120 cross-border deals and 6,120 matched domestic deals). The results of replicating Tables 3 and 4 are reported in Panels A and B (respectively) of Table 7, and in these regressions the large currency appreciation indicator is

[15] See also footnote 9 above.

set equal to zero for domestic deals.[16] We find that the relation between large currency appreciation and acquirer abnormal returns remains unchanged using this matched sample.

3.5. Large currency appreciation and acquisition premiums / synergies

Our results thus far have shown that cross-border acquisitions following large currency appreciations and conducted by better-governed firms create more shareholder wealth. In this section we explore two channels that might help us better understand why acquirers with strong shareholder protection experience significantly higher abnormal announcement returns from these deals.

3.5.1. Target premiums

The first channel we explore is the premium paid to target shareholders. If the premium is too high, a deal might create no value (or even negative value) for acquirer shareholders (ceteris paribus). In addition, high premiums can also be induced by empire building incentives and other agency problems (Lin et al., 2012). Thus, if the premium paid to the target is too high when shareholders are not well protected, this could erode most of the gains that would otherwise accrue to acquirer shareholders from large currency appreciation deals. We test this conjecture by examining the effect of large currency appreciation on acquisition premiums. We measure acquisition premiums as the premium paid to target shareholders over the target's stock price four weeks prior to deal announcement (measured by SDC). By definition, this takeover premium measure is only available when the target firm is a public firm, resulting in a significant drop in our sample size (to around 1,000 observations).

[16] In other words, the large currency appreciation indicator is only equal to one for cross-border deals following a large currency appreciation in the prior 12 months.

[Insert Table 8 here]

Table 8 presents average acquisition premiums paid for target firms in our cross-border sample. To evaluate whether weak shareholder protection (or governance) leads to overpayment, we partition our cross-border sample into three groups: large currency appreciation deals completed by acquirers from weak governance countries (Column (1)); large currency appreciation deals completed acquirers from by strong governance countries (Column (2)); all other deals (Column (3)). We classify the governance of the acquirer's country using the medians of various indices of shareholder protection. The results in Columns (4)-(5) show that target premiums are about 13-20 percentage points higher in cross-border deals following large currency appreciations for acquirers from countries with weak protection of outside shareholder rights (relative to all other deals). These effects are economically large given that average premiums in our sample are about 48.5% (Table 2). By contrast, we do not find a significantly higher acquisition premium in large currency appreciation deals for acquirers from countries with strong investor protection environment (Columns (6) and (7)).

These results suggest that acquirers from countries with weak investor protection tend to overpay their targets when undertaking cross-border M&A deals following large currency appreciations. This supports the contention that overpayment, likely driven by weak governance, is one channel that prevents acquirer shareholders from participating in the wealth created by large currency appreciation deals, further supporting the agency argument (see also Fu, Lin, and Officer, 2013).

3.5.2. Synergies (long-run abnormal returns)

It is difficult for acquirers to effectively manage integration of foreign targets given geographic distance, cultural differences, or lack of local industry expertise (Ahern, Daminelli, and Fracassi, 2012). Do acquisitions following large currency appreciations create value (or synergies) for acquirer shareholders in the long run? This is the second channel through which we hope to shed light on the issue of why acquirers with strong shareholder protection experience significantly higher abnormal announcement returns from these deals.

Specifically, we analyze post-merger abnormal performance to examine whether the positive market reaction at the announcement can be justified by real economic gains (or synergies) from large currency appreciation mergers. We use long-run abnormal stock returns to proxy for synergies: we do not use an accounting-based synergy measure because this would require the target to be public *and* require three years of post-acquisition accounting data for the acquirer, leading to a significant drop in our sample size. In addition, another concern is that the accounting numbers in countries with weak legal regimes may be not reliable (at least compared to countries with strong investor protection). We employ the Buy and Hold Abnormal Return (BHAR) approach to measure long-term abnormal performance.[17] Then we calculate the mean buy-and hold abnormal returns for large currency appreciation deals and all other deals (modest currency appreciation and currency depreciation deals).

Table 9 presents average long-term buy-and-hold abnormal returns over various windows for acquirers in our sample of cross-border mergers and acquisitions. Our focus is to compare the post-announcement performance of acquirers that undertake a large currency appreciation deal and those that do not. We find that acquirers consummating large currency appreciation deals significantly outperform other acquirers (i.e., those that complete cross-border M&As that do not follow a large currency appreciation) by 5.6%, 7.8%, and 11.6% over 1-year, 2-year, and 3-year

[17] Barber and Lyon (1997) advocate the use of buy-and-hold abnormal returns, and argue that this methodology accurately captures investor experience.

holding periods, respectively. The relative outperformance of large currency appreciation acquirers suggests that large currency appreciation mergers benefit long-term acquirer shareholders.

[Insert Table 9 here]

Next, we use OLS regressions to estimate the impact of large currency appreciations on long-run buy-and-hold abnormal returns. The dependent variable is 3-year buy-and-hold market-adjusted returns for acquiring firms. Our key explanatory variable is the large currency appreciation indicator variable. We control for the same set of acquirer characteristics, deal characteristics, country characteristics, year, industry, and acquirer country fixed effects that are employed in prior tables. The regression results are reported in Table 10. From the Column (1), we observe that the estimated coefficient on the large currency appreciation indicator variable is positive and significant at the 5% level, implying that M&A deals following large currency appreciations are also beneficial for acquirer shareholders in the long-run (i.e., these deals appear to generate synergies). More specifically, large currency appreciation is associated with an 11.7 percentage point increase in three-year buy-and-hold abnormal returns for cross-border acquirers.

[Insert Table 10 here]

To further investigate whether strong governance drives long-term abnormal performance (or synergies), we examine interactions similar to those in Table 4. Specifically, we add to the regression the interaction between various shareholder protection indices and the large currency

appreciation indicator variable. Columns (2)-(5) show the results. We observe that shareholders of acquirers from countries with strong shareholder protection experience larger wealth improvements in the three-year post-announcement period following large currency appreciations. As acquiring firms' shareholder protection indices increase by one standard deviation, M&A deals following large exchange rate appreciations are associated with about 9%-12% higher long-term abnormal returns, indicative of substantial synergies.

With respect to the control variables, we find that acquirer pre-announcement stock price runup and Tobin's Q are significantly negatively associated with long-run acquirer returns. In addition, we find that diversifying cross-border acquisitions (those involving unrelated targets) lead to lower long-term stock returns, while deals for subsidiary targets appear to be associated with higher long-run wealth creation via synergies for the acquirer.

Overall, these results demonstrate that M&A deals after large currency appreciations appears to be a value-creating activity that benefit acquirer shareholders in the long-run (i.e., generate synergies), particularly for acquirers from countries with stronger shareholder rights.

4. Conclusion

A strong currency is an important factor affecting the intensity of cross-border acquisitions. However, there is little empirical work about the value consequences of these valuation-induced acquisitions. In this paper, we examine a valuation effect of currency appreciation in an international context to shed light on the wealth implications for acquirer shareholders. The "large currency appreciation" deals in our paper are executed by acquiring firms from countries with high exchange rate appreciation relative to the home-countries of the target firms. Using a comprehensive sample of 12,030 cross-border mergers over the period 1996-2012, we find strong evidence that cross-border transactions led by acquiring firms with an appreciating

currency generate higher abnormal announcement returns and, in particular, this wealth effect is more pronounced when the acquirer is from a country with stronger protection for outside investors. Additionally, we test whether this value creation in appreciation-driven acquisitions is particularly strong for firms with better corporate governance using U.S. firm-level governance proxies, and find that this is indeed the case. Further analyses show that acquirers from weak legal environments are more likely to pay higher takeover premiums when buying a foreign target in a country with a weak currency. As a final step, we examine long-term abnormal returns and find that large appreciation acquirers also outperform in the three-year post-announcement period. The outperformance is again more prominent for acquirers from countries with stronger shareholder rights.

Overall, our results provide support for both the overvaluation and agency arguments in mergers and acquisitions. Consistent with the overvaluation hypothesis (Shleifer and Vishny, 2003), appreciation-motivated cross-border acquisitions appear to create wealth for acquirer shareholders. Nevertheless, taking advantage of exchange rate mispricing is not a sufficient condition to benefit shareholders of acquiring firms. The lack of effective shareholder protection seems to offset (via higher premiums and lower synergies) any benefit from appreciation-driven cross-border deals, which is exactly what agency theory predicts.

References

Ahern, K., Daminelli, D., Fracassi, C., 2012. Lost in translation? The effect of cultural values on mergers around the world. Journal of Financial Economics, forthcoming.

Amihud, Y., Lev, B., 1981. Risk reduction as a managerial motive for conglomerate mergers. Bell Journal of Economics 12, 605-617.

Barber, B., Lyon, J., 1997. Detecting long-run abnormal stock returns: The empirical power and specification of test statistics. Journal of Financial Economics 43, 341-372.

Bliss, R., Rosen, R., 2001. CEO compensation and bank mergers. Journal of Financial Economics 61, 107-138.

Blonigen, B., 1997. Firm-specific assets and the link between exchange rates and foreign direct investment. American Economic Review 87, 447-465.

Bris, A., Cabolis, C., 2008. The value of investor protection: Firm evidence from cross-border mergers. Review of Financial Studies 21, 605-648.

Chari, A., Ouimet, P., Tesar, L., 2009. The value of control in emerging markets. Review of Financial Studies 23, 1741–1770.

Dinc, I.S., Erel, I., 2013. Economic nationalism in mergers and acquisitions. Journal of Finance 68, in press.

Djankov, S., La Porta, R., Lopez-de-Silanes, F., Shleifer, A., 2008. The law and economics of self-dealing. Journal of Financial Economics 88, 430–465.

Dong, M., Hirshleifer, D., Richardson, S., Teoh, S., 2006. Does investor misvaluation drive the takeover market? Journal of Finance 61, 725-762.

Erel, I., Liao, R., Weisbach, M., 2012. Determinants of cross-border mergers and acquisitions. Journal of Finance 67, 1031–1043.

Froot, K., Stein, J., 1991. Exchange Rates and Foreign Direct Investment: An Imperfect Capital Markets Approach. Quarterly Journal of Economics 106, 1191-1217.

Fu, F., Lin, L., Officer, M., 2013. Acquisitions driven by stock overvaluation: Are they good deals? Journal of Financial Economics 109, 24-39.

Fuller, K., Netter, J., Stegemoller, M., 2002. What do returns to acquiring firms tell us? Evidence from firms that make many acquisitions. Journal of Finance 57, 1763–1794.

Giroud, X., Mueller, H., 2010. Does corporate governance matter in competitive industries? Journal of Financial Economics 95, 312-331.

Grinstein, Y., Hribar, P., 2004. CEO compensation and incentives: Evidence from M&A bonuses. Journal of Financial Economics 73, 119-143.

Harford, J., Humphery, M., Powell, R., 2012. The sources of value destruction in acquisitions by entrenched managers. Journal of Financial Economics 106, 247-261.

Harford, J., Li, K., 2007. Decoupling CEO wealth and firm performance: the case of acquiring CEOs. Journal of Finance 62, 917-949.

Hart, O., 1983. The market mechanism as an incentive scheme. Bell Journal of Economics 14, 366-382.

Jensen, M., 1986. The agency costs of free cash flow: corporate finance and takeovers. American Economic Review 76, 323-329.

Jensen, M., 2005. Agency costs of overvalued equity. Financial Management 34, 5-19.

Kang, J., 1993. The international market for corporate control: Mergers and acquisitions of U.S. firms by Japanese firms. Journal of Financial Economics 34, 345-371.

Karolyi, G.A., Taboada, A.G., 2014. Regulatory arbitrage and cross-border bank acquisitions. Journal of Finance, forthcoming.

Kaufmann, D., Kraay, A., Mastruzzi, M., 2009. Governance Matters VIII: Aggregate and Individual Governance Indicators 1996-2008. Unpublished Working Paper, World Bank.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., 1998. Law and finance. Journal of Political Economy 106, 1113–1155.

Lin, C., Officer, M., Zou, H., 2011. Directors' and officers' liability insurance and acquisition outcomes. Journal of Financial Economics 102, 507-525.

Masulis, R., Wang, C., Xie, F., 2007. Corporate governance and acquirer returns. Journal of Finance 62, 1851-1889.

May, D., 1995. Do managerial motives influence firm risk reduction strategies? Journal of Finance 50, 1291-1308.

Moeller, S., Schlingemann, F., 2005. Global diversification and bidder gains: A comparison between cross-border and domestic acquisitions. Journal of Banking and Finance 29, 533-564.

Moeller, S., Schlingemann, F., Stulz, R., 2004. Firm size and the gains from acquisitions. Journal of Financial Economics 73, 201–228.

Moeller, S., Schlingemann, F., Stulz, R., 2005. Wealth destruction on a massive scale? A study of acquiring-firm returns in the recent merger wave. Journal of Finance 60, 757-782.

Morck, R., Shleifer, A., Vishny, R., 1990. Do managerial objectives drive bad acquisitions? Journal of Finance 45, 31-48.

Rhodes-Kropf, M., Viswanathan, S., 2004. Market valuation and merger waves. Journal of Finance 59, 2685-2718.

Rossi, S., Volpin, P., 2004. Cross-country determinants of mergers and acquisitions. Journal of Financial Economics 74, 277–304.

Savor, P., Lu, Q., 2009. Do stock mergers create value for acquirers? Journal of Finance 64, 1061-1097.

Shleifer, A., Vishny, R., 1997. A survey of corporate governance. Journal of Finance 52, 737-783.

Shleifer, A., Vishny, R., 2003. Stock market driven acquisitions. Journal of Financial Economics 70, 295-311.

Table 1

Variable definitions

Variables	Definitions
Currency appreciation measure	
Exchange rate return [A-T]_1y	The difference between the U.S. dollar real exchange rate returns for the acquirer and target countries for the one year prior to an acquisition announcement
Large currency appreciation	An indicator variable equal to one if Exchange rate return [A-T]_1y is more than one standard deviation above the sample average
Cumulative abnormal returns and premiums	
CAR(-2,+2) (%)	5-day cumulative abnormal returns (CARs) to the acquirer's stock, estimated using the market model over the period [-210,-11], where event day 0 is the acquisition announcement date
Prem_4week (%)	((Offer price / Target stock price 4 weeks before announcement) - 1)*100
BHAR_1y (%)	Long-run abnormal return for a 1-year holding period, computed as market-adjusted buy-and-hold returns over an event window [0,250], where event day 0 is the acquisition announcement date
BHAR_2y (%)	Long-run abnormal return for a 2-year holding period, computed as market-adjusted buy-and-hold returns over an event window [0,500], where event day 0 is the acquisition announcement date
BHAR_3y (%)	Long-run abnormal return for a 3-year holding period, computed as market-adjusted buy-and-hold returns over an event window [0,750], where event day 0 is the acquisition announcement date
Firm-level (acquirer) characteristics	
Log [Total Assets]	The natural log of the acquirer's book value of total assets (in millions of U.S. dollars)
Cash flow	Funds from operations (for the acquirer) divided by total assets
Tobin's Q	Market value of total assets (total assets - book value of common equity + market value of common equity; for the acquirer) divided by book value of total assets
Leverage	The ratio of total debt (for the acquirer) to total assets
Stock runup	The acquirer's buy-and-hold return during the [-210,-11] window minus the (local) market's buy-and-hold return over the same period
Deal-level characteristics	
Relative size	The ratio of SDC deal value to the acquirer's market value of equity measured on the 11th trading day prior to the announcement date

Unrelated deal	An indicator variable equal to one for deals in which the acquirer and the target do not have the same two-digit SIC industry
Private target dummy	An indicator variable equal to one if the target is a private firm
Subsidiary target dummy	An indicator variable equal to one if the target is a subsidiary
Public target dummy	An indicator variable equal to one if the target is a public firm
All cash deal	An indicator variable equal to one if the deal is 100% financed with cash
Friendly deal	An indicator variable equal to one if the deal is friendly
Tender offer	An indicator variable equal to one if the deal is a tender offer
Country-level characteristics	
Log [GDP per capita]	The logarithm of annual Gross Domestic Product (in U.S. dollars) divided by the population
GDP growth	The annual growth rate of GDP per capita
Mktcap/GDP	The market capitalization of listed companies divided by GDP
Anti-self dealing index	The index measures legal protection of minority shareholders against private control of self-dealing by corporate insiders (DLLS, 2008)
Anti-director rights index	The index measures the effective rights of minority shareholders (DLLS, 2008)
Shareholder protection index	The index measures the shareholder protection, computed as the product of anti-director rights and rule of law divided by ten. (LLSV, 1998)
WGI index	The sum of all six Kaufmann et al. (2009) worldwide governance indicators: voice and accountability; political stability and absence of violence/terrorism; government effectiveness; regulatory quality; rule of law, and control of corruption. Each index ranges from -2.5 to 2.5. Higher value indicates better country governance.
U.S. firm-level governance measures	
Institutional ownership	Fraction of acquirer's common stock held by institutional investors
HHI index	The acquirer’s Herfindahl-Hirschman index, computed as the sum of squared market shares in the acquirer’s industry

Table 2

Summary statistics

The sample contains all completed cross-border acquisitions between 1996 and 2012 with relevant data. The variables are described in Table 1.

Variable	N	Mean	Std. dev	P25	Median	P75
CAR(-2,+2) (%percentage)	12030	1.314	7.902	-2.394	0.578	4.202
Prem_4week (%percentage)	988	48.505	50.446	21.305	37.505	63.59
Large currency appreciation	12030	0.127	0.333	0	0	0
Exchange rate return [A-T]_1y	12030	0	0.091	-0.054	0	0.054
Log [Total Assets]	12030	6.552	2.307	4.972	6.545	8.168
Cash flow	12030	0.083	0.136	0.059	0.098	0.142
Tobin's Q	12030	2.398	2.314	1.273	1.686	2.535
Leverage	12030	0.202	0.166	0.052	0.185	0.311
Stock runup	12030	0.141	0.637	-0.165	0.024	0.253
Relative size	12030	0.318	1.304	0.012	0.044	0.16
Unrelated deal	12030	0.425	0.494	0	0	1
Private target dummy	12030	0.496	0.5	0	0	1
Subsidiary target dummy	12030	0.39	0.488	0	0	1
Public target dummy	12030	0.114	0.318	0	0	0
All cash deal	12030	0.331	0.47	0	0	1
Friendly deal	12030	0.994	0.077	1	1	1
Tender offer	12030	0.054	0.226	0	0	0
Log [GDP per capita]_acquirer	12030	10.262	0.651	10.126	10.414	10.605
Log [GDP per capita]_target	12030	10.066	0.88	10.011	10.338	10.603
GDP growth_acquirer	12030	2.092	2.283	1.159	2.166	3.191
GDP growth_target	12030	2.221	2.581	1.102	2.163	3.255
Mktcap/GDP_acquirer	12030	119.23	52.585	82.547	121.659	144.662
Mktcap/GDP_target	12030	104.75	55.556	60.279	107.664	137.707
Anti-self dealing index	12015	0.649	0.23	0.463	0.654	0.95
Anti-director rights index	12015	3.859	0.925	3	4	5
Shareholder protection index	11826	3.475	0.717	3	3.5	4.043
WGI index	12030	8.206	2.644	7.552	8.799	9.825

Table 3

The effect of large currency appreciation on acquirer announcement returns

This table reports the results of OLS regressions of the effect of large currency appreciation on acquirer abnormal announcement returns. The dependent variable is the acquirer's five-day CAR (-2, +2). Column (1) uses the full sample. Column (2) examines the subsample of deals that experience currency appreciation. Column (3) excludes deals involving a U.S. acquirer. Column (4) uses weighted least squares (WLS) regression, where each deal is weighted by the inverse of the total number of cross-border deals in that country. All variables are defined in Table 1. Heteroskedasticity-consistent standard errors clustered at the acquirer country level are reported in brackets. The coefficient on the constant is suppressed for brevity. *, **, and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent variable: CAR(-2,+2)	All	Currency appreciation deals	U.S. excluded	WLS
	(1)	(2)	(3)	(4)
Large currency appreciation	0.609***	0.674***	0.750***	0.607***
	[0.227]	[0.247]	[0.256]	[0.232]
Log [Total Assets]	-0.434***	-0.418***	-0.488***	-0.435***
	[0.053]	[0.080]	[0.038]	[0.045]
Cash flow	-2.999***	-4.339***	-2.940***	-2.997***
	[0.677]	[0.938]	[0.864]	[0.969]
Tobin's Q	-0.019	-0.047	-0.063	-0.020
	[0.047]	[0.048]	[0.055]	[0.052]
Leverage	0.069	-0.397	0.216	0.066
	[0.652]	[0.944]	[0.855]	[0.554]
Stock runup	-1.814***	-1.838***	-1.994***	-1.815***
	[0.229]	[0.291]	[0.221]	[0.185]
Relative size	0.352***	0.336*	0.316***	0.353***
	[0.119]	[0.172]	[0.104]	[0.090]
Unrelated deal	-0.144	-0.229	-0.119	-0.143
	[0.132]	[0.175]	[0.169]	[0.149]
Private target dummy	0.911**	1.176**	0.729	0.907***
	[0.417]	[0.582]	[0.529]	[0.328]
Subsidiary target dummy	1.575***	1.542***	1.352***	1.570***
	[0.356]	[0.428]	[0.423]	[0.318]
All cash deal	0.171	0.117	0.207	0.168
	[0.151]	[0.201]	[0.198]	[0.146]
Friendly deal	-0.216	0.375	-0.338	-0.226
	[0.590]	[0.959]	[0.774]	[0.753]
Tender offer	0.388	0.182	0.418	0.387
	[0.348]	[0.799]	[0.465]	[0.407]
Log [GDP per capita]_acquirer	-0.097	-0.449	-0.726	-0.103
	[0.705]	[1.157]	[0.713]	[0.675]
Log [GDP per capita]_target	0.003	0.111	0.082	0.005
	[0.094]	[0.147]	[0.100]	[0.115]

GDP growth_acquirer	0.014	-0.054	-0.007	0.014
	[0.065]	[0.111]	[0.061]	[0.065]
GDP growth_target	0.030	0.135**	0.048	0.030
	[0.038]	[0.066]	[0.046]	[0.042]
Mktcap/GDP_acquirer	-0.003	-0.003	-0.004	-0.003
	[0.004]	[0.007]	[0.004]	[0.004]
Mktcap/GDP_target	-0.001	-0.002	-0.002	-0.001
	[0.001]	[0.002]	[0.002]	[0.002]
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Acquirer Country dummies	Yes	Yes	Yes	Yes
Observations	12,030	5,990	9,104	12,030
Adjusted R^2	0.0543	0.0563	0.0631	0.0546

Table 4

The effect of large currency appreciation on acquirer announcement returns: interactions

This table reports the results of OLS regressions of the effect of large currency appreciation on acquirer abnormal announcement returns. The dependent variable is acquirer's five-day CAR (-2, +2). All variables are defined in Table 1. Heteroskedasticity-consistent standard errors clustered at the acquirer country level are reported in brackets. The coefficient on the constant is suppressed for brevity. *, **, and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: All deals

Dependent variable:	CAR(-2,+2)			
	(1)	(2)	(3)	(4)
Large currency appreciation * Anti-self dealing index	2.596***			
	[0.615]			
Large currency appreciation * Anti-director rights index		0.485**		
		[0.197]		
Large currency appreciation * Shareholder protection index			1.061***	
			[0.179]	
Large currency appreciation * WGI index				0.134**
				[0.066]
Large currency appreciation	-1.108**	-1.279*	-3.088***	-0.483
	[0.431]	[0.745]	[0.648]	[0.533]
Log [Total Assets]	-0.435***	-0.434***	-0.444***	-0.434***
	[0.053]	[0.053]	[0.054]	[0.053]
Cash flow	-3.003***	-3.005***	-2.963***	-3.001***
	[0.671]	[0.672]	[0.669]	[0.674]
Tobin's Q	-0.018	-0.017	-0.012	-0.018
	[0.047]	[0.047]	[0.046]	[0.046]
Leverage	0.049	0.057	0.098	0.073
	[0.646]	[0.647]	[0.644]	[0.650]

Stock runup	-1.815***	-1.819***	-1.810***	-1.813***
	[0.228]	[0.228]	[0.229]	[0.228]
Relative size	0.350***	0.352***	0.346***	0.353***
	[0.118]	[0.118]	[0.117]	[0.119]
Unrelated deal	-0.143	-0.140	-0.143	-0.149
	[0.134]	[0.134]	[0.135]	[0.132]
Private target dummy	0.885**	0.897**	0.928**	0.902**
	[0.421]	[0.419]	[0.402]	[0.415]
Subsidiary target dummy	1.556***	1.568***	1.616***	1.567***
	[0.361]	[0.360]	[0.338]	[0.355]
All cash deal	0.164	0.162	0.172	0.170
	[0.151]	[0.151]	[0.152]	[0.151]
Friendly deal	-0.197	-0.204	-0.401	-0.230
	[0.591]	[0.596]	[0.618]	[0.588]
Tender offer	0.363	0.373	0.398	0.384
	[0.352]	[0.348]	[0.327]	[0.345]
Log [GDP per capita]_acquirer	-0.156	-0.062	0.382	-0.126
	[0.709]	[0.708]	[0.628]	[0.686]
Log [GDP per capita]_target	-0.011	-0.001	0.008	0.006
	[0.092]	[0.091]	[0.093]	[0.094]
GDP growth_acquirer	0.014	0.014	0.030	0.019
	[0.066]	[0.067]	[0.067]	[0.066]
GDP growth_target	0.028	0.031	0.026	0.030
	[0.039]	[0.038]	[0.039]	[0.038]
Mktcap/GDP_acquirer	-0.003	-0.003	-0.004	-0.003
	[0.004]	[0.004]	[0.004]	[0.004]
Mktcap/GDP_target	-0.000	-0.001	-0.000	-0.001
	[0.001]	[0.001]	[0.001]	[0.001]
Year dummies	Yes	Yes	Yes	Yes

Industry dummies	Yes	Yes	Yes	Yes
Acquirer Country dummies	Yes	Yes	Yes	Yes
Observations	12,015	12,015	11,826	12,030
Adjusted R^2	0.0550	0.0548	0.0558	0.0545

Panel B: Currency appreciation deals

Dependent variable:	CAR(-2,+2)			
	(1)	(2)	(3)	(4)
Large currency appreciation * Anti-self dealing index	3.126***			
	[0.646]			
Large currency appreciation * Anti-director rights index		0.619***		
		[0.223]		
Large currency appreciation * Shareholder protection index			1.147***	
			[0.179]	
Large currency appreciation * WGI index				0.130*
				[0.073]
Large currency appreciation	-1.401***	-1.731**	-3.326***	-0.394
	[0.435]	[0.844]	[0.645]	[0.585]
Log [Total Assets]	-0.419***	-0.418***	-0.423***	-0.418***
	[0.079]	[0.079]	[0.081]	[0.080]
Cash flow	-4.331***	-4.336***	-4.417***	-4.344***
	[0.930]	[0.931]	[0.938]	[0.935]
Tobin's Q	-0.046	-0.044	-0.036	-0.046
	[0.048]	[0.048]	[0.046]	[0.048]
Leverage	-0.439	-0.413	-0.392	-0.395
	[0.929]	[0.932]	[0.923]	[0.942]
Stock runup	-1.838***	-1.847***	-1.831***	-1.839***
	[0.291]	[0.289]	[0.295]	[0.291]

Relative size	0.336*	0.341*	0.325*	0.336*
	[0.172]	[0.173]	[0.169]	[0.172]
Unrelated deal	-0.222	-0.221	-0.237	-0.237
	[0.177]	[0.178]	[0.177]	[0.175]
Private target dummy	1.144*	1.168*	1.227**	1.159*
	[0.588]	[0.581]	[0.542]	[0.580]
Subsidiary target dummy	1.508***	1.534***	1.612***	1.525***
	[0.434]	[0.428]	[0.366]	[0.427]
All cash deal	0.118	0.112	0.108	0.113
	[0.201]	[0.202]	[0.201]	[0.200]
Friendly deal	0.419	0.384	0.222	0.378
	[0.969]	[0.986]	[1.036]	[0.954]
Tender offer	0.154	0.159	0.202	0.170
	[0.800]	[0.791]	[0.770]	[0.796]
Log [GDP per capita]_acquirer	-0.603	-0.475	0.203	-0.526
	[1.165]	[1.159]	[1.205]	[1.130]
Log [GDP per capita]_target	0.094	0.113	0.107	0.118
	[0.146]	[0.144]	[0.146]	[0.148]
GDP growth_acquirer	-0.061	-0.057	-0.029	-0.048
	[0.110]	[0.113]	[0.110]	[0.111]
GDP growth_target	0.131*	0.136**	0.114	0.134**
	[0.067]	[0.066]	[0.068]	[0.067]
Mktcap/GDP_acquirer	-0.003	-0.003	-0.003	-0.003
	[0.006]	[0.007]	[0.006]	[0.007]
Mktcap/GDP_target	-0.001	-0.002	-0.002	-0.002
	[0.002]	[0.002]	[0.002]	[0.002]
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Acquirer Country dummies	Yes	Yes	Yes	Yes

Observations	5,985	5,985	5,860	5,990
Adjusted R^2	0.0575	0.0572	0.0579	0.0565

Table 5

The effect of large currency appreciation on acquisition announcement returns: U.S. acquirers

This table reports the results of OLS regressions of the effect of large currency appreciation on U.S. acquirer announcement returns. The dependent variable is acquirer's five-day CAR (-2, +2). High IO is an indicator variable equal to one if the acquirer's institutional ownership is above the sample median. Low HHI is an indicator variable equal to one if the acquirer's HHI (Herfindahl-Hirschman index) is below the sample median. All other variables are defined in Table 1. Heteroskedasticity-consistent standard errors clustered at the acquirer level are reported in brackets. The coefficient on the constant is suppressed for brevity. *, **, and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent variable:	CAR(-2,+2)	
	(1)	(2)
Large currency appreciation * High IO	1.610*	
	[0.946]	
High institutional ownership	0.127	
	[0.334]	
Large currency appreciation * Low HHI		1.710**
		[0.863]
Low HHI index		-0.041
		[0.378]
Large currency appreciation	-0.150	-0.737
	[0.676]	[0.650]
Log [Total Assets]	-0.142	-0.204**
	[0.096]	[0.102]
Cash flow	-1.921	-3.917
	[3.088]	[2.404]
Tobin's Q	0.052	0.052
	[0.104]	[0.088]
Leverage	-0.601	-0.602
	[1.062]	[1.046]
Stock runup	-1.611***	-1.288***
	[0.401]	[0.355]
Relative size	2.698**	1.588
	[1.256]	[1.249]
Unrelated deal	-0.287	-0.186
	[0.316]	[0.294]
Private target dummy	0.809	1.603**
	[0.687]	[0.692]
Subsidiary target dummy	1.602**	2.363***
	[0.668]	[0.681]

All cash deal	0.087	0.120
	[0.305]	[0.295]
Friendly deal	0.309	-0.346
	[1.531]	[1.464]
Tender offer	-0.148	0.253
	[0.905]	[0.835]
Log [GDP per capita]_target	-0.227	-0.305
	[0.271]	[0.249]
GDP growth_target	-0.019	-0.054
	[0.098]	[0.092]
Mktcap/GDP_target	-0.002	0.003
	[0.004]	[0.003]
Year dummies	Yes	Yes
Industry dummies	Yes	Yes
Observations	2,466	2,917
Adjusted R^2	0.0252	0.0304

Table 6

The effect of large currency appreciation on acquirer announcement returns: robustness

This table reports the results of OLS regressions of the effect of large currency appreciation on acquirer abnormal announcement returns. The dependent variable is the acquirer's five-day CAR (-2, +2). All variables are defined in Table 1. Heteroskedasticity-consistent standard errors clustered at the acquirer country level are reported in brackets. The coefficient on the constant is suppressed for brevity. *, **, and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent variable: CAR(-2,+2)	Heckman	Excluding deals where the acquirer and target share a common currency	Excluding |Exchange rate return [A-T]| < 1%	Control for currency volatility	Excluding deals during financial crisis / Euro crisis
	(1)	(2)	(3)	(4)	(5)
Large currency appreciation	0.610***	0.571**	0.622***	0.606**	0.893**
	[0.225]	[0.228]	[0.232]	[0.234]	[0.350]
Log [Total Assets]	-0.433***	-0.447***	-0.423***	-0.434***	-0.444***
	[0.054]	[0.056]	[0.056]	[0.053]	[0.054]
Cash flow	-3.005***	-2.826***	-2.989***	-2.999***	-2.586***
	[0.675]	[0.684]	[0.777]	[0.677]	[0.757]
Tobin's Q	-0.018	-0.006	-0.028	-0.019	-0.022
	[0.047]	[0.049]	[0.043]	[0.047]	[0.045]
Leverage	0.059	0.222	-0.114	0.069	0.460
	[0.648]	[0.645]	[0.597]	[0.651]	[0.616]
Stock runup	-1.814***	-1.776***	-1.722***	-1.814***	-1.748***
	[0.228]	[0.240]	[0.252]	[0.229]	[0.234]
Relative size	0.352***	0.362***	0.381***	0.352***	0.329**
	[0.119]	[0.122]	[0.128]	[0.119]	[0.129]
Unrelated deal	-0.144	-0.133	-0.155	-0.144	-0.072
	[0.133]	[0.139]	[0.136]	[0.132]	[0.151]
Private target dummy	0.914**	1.038**	1.001*	0.911**	0.843**
	[0.417]	[0.420]	[0.504]	[0.416]	[0.370]
Subsidiary target dummy	1.580***	1.658***	1.583***	1.576***	1.460***

	[0.356]	[0.359]	[0.416]	[0.354]	[0.350]
All cash deal	0.169	0.189	0.188	0.170	0.129
	[0.150]	[0.149]	[0.141]	[0.151]	[0.166]
Friendly deal	-0.214	-0.226	0.153	-0.216	0.227
	[0.589]	[0.643]	[0.655]	[0.590]	[0.730]
Tender offer	0.392	0.438	0.364	0.388	0.094
	[0.348]	[0.362]	[0.408]	[0.348]	[0.379]
Log [GDP per capita]_acquirer	-0.107	-0.276	-0.586	-0.096	-0.301
	[0.702]	[0.725]	[0.795]	[0.703]	[0.655]
Log [GDP per capita]_target	-0.014	0.011	-0.001	0.005	0.040
	[0.110]	[0.099]	[0.102]	[0.101]	[0.131]
GDP growth_acquirer	0.013	0.011	0.007	0.015	0.071
	[0.065]	[0.062]	[0.073]	[0.065]	[0.079]
GDP growth_target	0.029	0.034	0.027	0.031	0.011
	[0.039]	[0.038]	[0.040]	[0.036]	[0.047]
Mktcap/GDP_acquirer	-0.003	-0.002	-0.000	-0.003	-0.008*
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
Mktcap/GDP_target	-0.001	-0.001	-0.000	-0.001	-0.000
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Inverse mills ratio	-0.139				
	[0.270]				
Exchange rate volatility				0.463	
				[6.252]	
Year dummies	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes
Acquirer Country dummies	Yes	Yes	Yes	Yes	Yes
Observations	12,030	11,351	10,502	12,030	10,100
Adjusted R^2	0.0543	0.0538	0.0529	0.0542	0.0480

Table 7

The effect of large currency appreciation on acquirer announcement returns: including matched domestic deals

The sample contains cross-border acquisitions in our final sample (Table 3) and matched domestic acquisitions based on acquirer country-industry-year-size between 1996 and 2012. The dependent variable is the acquirer's five-day CAR (-2, +2). All variables are defined in Table 1, and in this table the large currency appreciation indicator variable is set equal to zero for matched domestic acquisitions. Heteroskedasticity-consistent standard errors clustered at the acquirer country level are reported in brackets. The coefficient on the constant is suppressed for brevity. *, **, and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A:

Dependent variable: CAR(-2,+2)	All	U.S. excluded
	(1)	(2)
Large currency appreciation	1.126***	1.593***
	[0.409]	[0.313]
Log [Total Assets]	-0.464***	-0.583***
	[0.077]	[0.047]
Cash flow	-1.945**	-1.865
	[0.911]	[1.308]
Tobin's Q	-0.040	-0.127**
	[0.052]	[0.059]
Leverage	0.318	0.618
	[0.294]	[0.482]
Stock runup	-1.506***	-1.560***
	[0.161]	[0.238]
Relative size	0.718***	0.588***
	[0.188]	[0.136]
Unrelated deal	-0.255	-0.045
	[0.163]	[0.151]
Private target dummy	1.982***	1.731*
	[0.475]	[0.952]
Subsidiary target dummy	2.534***	2.320***
	[0.369]	[0.770]
All cash deal	0.237***	0.306**
	[0.087]	[0.145]
Friendly deal	1.143	2.188
	[0.921]	[1.428]
Tender offer	0.833*	0.334
	[0.479]	[0.714]
Log [GDP per capita]_acquirer	0.726	0.415

	[0.993]	[1.306]
Log [GDP per capita]_target	-0.169	-0.129
	[0.129]	[0.192]
GDP growth_acquirer	-0.001	-0.038
	[0.099]	[0.102]
GDP growth_target	0.046	0.045
	[0.031]	[0.047]
Mktcap/GDP_acquirer	0.006	0.007
	[0.007]	[0.007]
Mktcap/GDP_target	-0.000	-0.003
	[0.002]	[0.003]
Year dummies	Yes	Yes
Industry dummies	Yes	Yes
Acquirer Country dummies	Yes	Yes
Observations	12,240	7,228
Adjusted R^2	0.0491	0.0555

Panel B:

Dependent variable:	CAR(-2,+2)			
	(1)	(2)	(3)	(4)
Large currency appreciation * Anti-self dealing index	2.768*			
	[1.490]			
Large currency appreciation * Anti-director rights index		0.581**		
		[0.215]		
Large currency appreciation * Shareholder protection index			1.120***	
			[0.347]	
Large currency appreciation * WGI index				0.116
				[0.129]
Large currency appreciation	-0.810	-1.079	-2.802**	0.156
	[1.206]	[0.844]	[1.304]	[1.178]
Log [Total Assets]	-0.465***	-0.465***	-0.463***	-0.464***
	[0.078]	[0.077]	[0.077]	[0.078]
Cash flow	-1.943**	-1.944**	-1.953**	-1.940**
	[0.909]	[0.907]	[0.911]	[0.909]
Tobin's Q	-0.041	-0.041	-0.035	-0.040
	[0.052]	[0.052]	[0.050]	[0.052]
Leverage	0.303	0.301	0.305	0.316
	[0.288]	[0.292]	[0.284]	[0.292]
Stock runup	-1.507***	-1.506***	-1.498***	-1.508***
	[0.161]	[0.161]	[0.164]	[0.161]
Relative size	0.717***	0.718***	0.692***	0.718***
	[0.189]	[0.189]	[0.189]	[0.188]
Unrelated deal	-0.255	-0.255	-0.243	-0.256
	[0.163]	[0.163]	[0.167]	[0.163]
Private target dummy	1.983***	1.979***	2.086***	1.979***
	[0.475]	[0.475]	[0.444]	[0.475]

Subsidiary target dummy	2.538***	2.536***	2.632***	2.531***
	[0.368]	[0.370]	[0.340]	[0.370]
All cash deal	0.236***	0.234**	0.233**	0.237***
	[0.087]	[0.087]	[0.089]	[0.087]
Friendly deal	1.137	1.137	1.010	1.140
	[0.922]	[0.922]	[0.916]	[0.921]
Tender offer	0.837*	0.837*	0.890*	0.832*
	[0.478]	[0.482]	[0.453]	[0.479]
Log [GDP per capita]_acquirer	0.722	0.788	1.576**	0.716
	[0.994]	[1.010]	[0.596]	[0.981]
Log [GDP per capita]_target	-0.175	-0.174	-0.151	-0.158
	[0.131]	[0.131]	[0.136]	[0.134]
GDP growth_acquirer	-0.001	0.003	0.035	-0.001
	[0.100]	[0.099]	[0.101]	[0.099]
GDP growth_target	0.046	0.044	0.054*	0.046
	[0.031]	[0.031]	[0.030]	[0.031]
Mktcap/GDP_acquirer	0.006	0.006	0.003	0.006
	[0.007]	[0.007]	[0.007]	[0.007]
Mktcap/GDP_target	0.000	-0.000	-0.000	-0.000
	[0.002]	[0.002]	[0.002]	[0.002]
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Acquirer Country dummies	Yes	Yes	Yes	Yes
Observations	12,236	12,236	12,088	12,240
Adjusted R^2	0.0491	0.0491	0.0491	0.0491

Table 8

The effect of large currency appreciation on acquisition premiums

This table presents differences in acquisition premiums (Prem_4week (%), defined in Table 1) between large currency appreciation deals by acquirers from weak/strong governance countries, and all other deals. For each governance proxy, countries are considered to have strong (weak) governance if their index value is above (below) the sample median. *, **, and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

	Large currency appreciation & weak governance	Large currency appreciation & strong governance	All other deals	Difference (1)-(3)	t-stat (1)-(3)	Difference (2)-(3)	t-stat (2)-(3)
Governance proxy	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Anti-self dealing index	59.898	56.805	47.168	12.729**	2.21	9.636	1.05
Anti-director rights index	62.974	55.487	47.168	15.806**	2.24	8.319	1.25
Shareholder protection index	65.295	52.918	47.168	18.480***	2.81	6.103	0.83
WGI index	67.242	50.109	47.168	20.074***	2.98	2.941	0.42

Table 9

Long-run abnormal returns

This table presents differences in buy-and-hold abnormal returns between large currency appreciation deals and all other deals. BHAR_1y (%) is the buy-and-hold abnormal return for a 1-year holding period, computed as market-adjusted buy-and-hold returns over the event window [0, 250]. BHAR_2y (%) is the buy-and-hold abnormal return for a 2-year holding period, computed as market-adjusted buy-and-hold returns over the event window [0, 500]. BHAR_3y (%) is the buy-and-hold abnormal return for a 3-year holding period, computed as market-adjusted buy-and-hold returns over the event window [0, 750]. We exclude multiple acquisition events by the same firm within any 1-year, 2-year and 3-year period, respectively, when calculating the buy-and-hold abnormal returns. *, **, and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

		Large currency appreciation	All other deals	Difference	t-stat
BHAR_1y (%)	# of Obs	718	4877		
	Average	5.607	0.013	5.594***	2.73
BHAR_2y (%)	# of Obs	562	3853		
	Average	5.739	-2.092	7.831**	2.31
BHAR_3y (%)	# of Obs	460	3146		
	Average	8.341	-3.251	11.592**	2.49

Table 10

The effect of large currency appreciation on long-run abnormal returns

This table reports the results of OLS regressions of the effect of large currency appreciation on acquirer buy-and-hold abnormal returns. The dependent variable is BHAR_3y (%), defined in Table 9. All other variables are defined in Table 1. Heteroskedasticity-consistent standard errors clustered at the acquirer country level are reported in brackets. The coefficient on the constant is suppressed for brevity. *, **, and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent variable:	BHAR_3y				
	(1)	(2)	(3)	(4)	(5)
Large currency appreciation * Anti-self dealing index		53.730**			
		[20.387]			
Large currency appreciation * Anti-director rights index			9.670**		
			[4.288]		
Large currency appreciation * Shareholder protection index				9.997	
				[7.123]	
Large currency appreciation * WGI index					1.552
					[1.692]
Large currency appreciation	11.728**	-22.914	-25.073	-21.631	-0.624
	[5.752]	[14.873]	[15.911]	[23.671]	[13.541]
Log [Total Assets]	2.264**	2.230**	2.233**	2.166*	2.232**
	[1.062]	[1.065]	[1.068]	[1.094]	[1.068]
Cash flow	48.909***	48.839***	48.789***	49.164***	49.299***
	[12.096]	[12.248]	[11.990]	[12.226]	[12.099]
Tobin's Q	-2.987***	-3.024***	-2.992***	-3.030***	-2.985***
	[0.757]	[0.763]	[0.762]	[0.767]	[0.759]
Leverage	-1.804	-1.950	-1.992	-1.966	-1.537
	[8.123]	[8.076]	[8.072]	[8.178]	[8.116]

Stock runup	-5.892*	-5.939*	-5.901*	-6.385**	-5.910*
	[3.083]	[3.072]	[3.079]	[3.069]	[3.086]
Relative size	1.442	1.438	1.465	1.475	1.446
	[2.156]	[2.130]	[2.137]	[2.199]	[2.154]
Unrelated deal	-6.970***	-7.004***	-6.943***	-7.176***	-7.074***
	[2.296]	[2.320]	[2.321]	[2.362]	[2.317]
Private target dummy	12.648***	12.345***	12.312***	14.064***	12.518***
	[4.076]	[3.942]	[4.191]	[3.687]	[4.187]
Subsidiary target dummy	24.118***	23.763***	23.910***	25.852***	24.039***
	[4.613]	[4.470]	[4.612]	[4.454]	[4.692]
All cash deal	5.285	5.254	5.301	5.682*	5.304
	[3.285]	[3.300]	[3.309]	[3.254]	[3.265]
Friendly deal	15.293*	15.690*	15.279*	13.930*	15.769*
	[8.432]	[8.485]	[8.604]	[7.737]	[8.476]
Tender offer	7.685	7.507	7.469	7.922	7.667
	[5.982]	[5.983]	[5.966]	[5.887]	[5.957]
Log [GDP per capita]_acquirer	13.945	13.604	16.501	9.113	14.216
	[15.926]	[15.661]	[16.330]	[18.562]	[16.276]
Log [GDP per capita]_target	-5.091*	-5.342*	-5.148*	-4.720	-5.083*
	[2.808]	[2.814]	[2.830]	[2.809]	[2.806]
GDP growth_acquirer	-1.640	-1.576	-1.570	-1.172	-1.640
	[1.740]	[1.737]	[1.766]	[1.811]	[1.729]
GDP growth_target	-0.816	-0.892	-0.813	-0.836	-0.831
	[0.701]	[0.705]	[0.701]	[0.695]	[0.704]
Mktcap/GDP_acquirer	0.154	0.151	0.158	0.116	0.160
	[0.107]	[0.107]	[0.108]	[0.114]	[0.108]
Mktcap/GDP_target	0.016	0.020	0.016	0.011	0.017
	[0.040]	[0.040]	[0.039]	[0.041]	[0.040]
Year dummies	Yes	Yes	Yes	Yes	Yes

Industry dummies	Yes	Yes	Yes	Yes	Yes
Acquirer Country dummies	Yes	Yes	Yes	Yes	Yes
Observations	3,606	3,602	3,602	3,544	3,606
Adjusted R^2	0.0657	0.0674	0.0670	0.0722	0.0657

Appendix: Sample distribution by country pairs

Country		Target																													
Acquirer		AR	AS	AU	BL	BR	BU	CA	CC	CE	CH	CO	CT	CY	DN	EA	EG	FN	FR	GR	HK	HU	IC	ID	IN	IR	IS	IT	JO	JP	KE	KU	LV
Argentina	AR					1																											
Austria	AS			1	1	1	2		2										2							2		2					
Australia	AU	3			5	8		39	1	1	17	1		1	1		1	2	8	2	7			10	5		1	3		1			1
Belgium	BL			1		3		1			3				3				24	1	1				1	1		6		2			
Brazil	BR	10	1	3				7				2																		1			
Canada	CA	11	2	55	7	28			1	1	13	7			2		1	8	14		3				3	8	7	3			1	1	
Czech Republic	CC						1																										
Chile	CE				1	3		1																									
China	CH			9				8	1						1				1		27	1		2						5			
Colombia	CO																																
Cyprus	CY																																
Denmark	DN			1		3		5	1		2		1					2	7		2				1			4					
Estonia	EA																		1														
Egypt	EG																																1
Finland	FN		2	3	1	4	1	4	1		2				5	3			5		3	1			4			4					
France	FR	5	1	7	17	24		21	2		7	1			7		3	3		1	2	1			10		5	23		3			
Greece	GR	1			1		3	1			1			5														5		1			
Hong Kong	HK			11		5		6			82								2					3	1		1	3		5			
Hungary	HU		1						2																								
Iceland	IC										1				1				3														
Indonesia	ID			3							5										1												
India	IN	1		9	2	4	1	2	2	1	1				1			2	8					5		2	1	4		1			
Ireland-Rep	IR		1	6		3		5	1		1	1			4			1	3						1		1	2					
Israel	IS	1		1		1	1	5	1		1				1				4	1	1				1			5		3			1
Italy	IT	3	2	3	5	6	1	4	1	1	7		1		1		1		31						2	2				1		2	
Japan	JP	2	3	21	9	12		4	1		15				2			1	15		9			9	9		1	6					
Kuwait	KU							1										1											1				
Slovenia	LV																			1													
Luxembourg	LX					1		2	1									1			1							1					
Malaysia	MA			4				1			7				1						7			12	1								
Malta	MT			1															1														
Mexico	MX	4		2		12		1				6					1									1							
Norway	NO		1	2	2	5		4							26	1		13	9		1				2								
Netherlands	NT	1	5	7	16	3	1	13	1		3		1		5			3	21	1		3			4	1		13		1			
New Zealand	NZ			25				3																				1					
Oman	OM																																
Peru	PE	1								1		1																					
Philippines	PH			4				1			2		1								2									1			
Poland	PL		1					2	4				1									1				1		2					
Portugal	PO					14											1		1														
Russian Fed	RU						1	5						3				2										2					
South Africa	SA		3	24	1	4		7	1						1			1	3		1							1			1		
Singapore	SG			16	1			2			23				1		1	1	2		27			9	4		1			2			
South Korea	SK			2				3	1		30								1		5			7	5			1		9			
Spain	SP	8	2	2	1	19			2	2		4			1			1	11			2						15	1				
Slovak Rep	SV																					2											
Sweden	SW	5	4	8	6	2	2	10	6	2	7		2		20	2	1	30	26			6		1		3	2	6					1
Switzerland	SZ	2	3	8	4	3		15	1	1	2	1						4	14		1	1		1	3	1	2	7					1
Thailand	TH			2							3								1		3			2	1								
Turkey	TK													1								1											
United Kingdom	UK	11	12	142	38	18		98	18	2	24	6	2	1	35		5	11	165	6	19	4		12	23	91	5	66		8	2		3
United States	US	36	13	154	35	50	3	535	10	3	68	6			41		6	19	199	2	27	6	1	2	37	36	92	51		27			1
Germany	WG		8	5	5	5	1	3	5		6		1		6			2	19	1	1	4			11	1	4	8		1			
	Total	105	65	542	158	242	18	819	67	15	333	36	10	11	166	6	21	108	601	16	151	33	1	75	129	150	123	244	2	72	4	3	9

Appendix, continued.

Country		Target																												
Acquirer		LX	MA	MR	MT	MX	NO	NT	NZ	PE	PH	PK	PL	PO	RO	RU	SA	SG	SK	SL	SP	SV	SW	SZ	TH	TK	TU	UK	US	WG	Total
Argentina	AR																												1		2
Austria	AS							5					2		3						2	1	4	2		1		3	5	15	56
Australia	AU		5				2	7	78	5	6			2			19	15	3	1	8		3	3	2			80	154	19	530
Belgium	BL	1	1				1	9						2			1		1		2		1	3	1	1		12	33	10	126
Brazil	BR					3	1	2		1				1														2	12		46
Canada	CA		1			24	6	11	6	19	2		1	1		4	6	1	2		5	1	14	7		4		81	657	22	1051
Czech Republic	CC												2		2											1					6
Chile	CE																												1		6
China	CH		1					2	1				1			1		4	2						1				15	3	86
Colombia	CO					1				2																			3		6
Cyprus	CY						1							1		3															5
Denmark	DN						5	7					6			4		2			2		12	5				11	23	6	112
Estonia	EA																														1
Egypt	EG							1													1										3
Finland	FN						14	10					2			7	1	2			1	2	28	3		1		11	36	27	188
France	FR	2		3		1	7	24	1		1		11	3	1	1	2	2	4		27	2	7	9	5	5		63	167	49	540
Greece	GR	1					1								3	2	2				1					5		3	5	1	42
Hong Kong	HK		2					2	2		1					1	2	3	1				3	2	4			8	18	2	170
Hungary	HU														1									1				1		1	7
Iceland	IC							1									1											3	3	1	14
Indonesia	ID																	2											1		12
India	IN		1			2		1					1	1	1	1	2	9	2	1	4			6	3			32	52	11	177
Ireland-Rep	IR					1		12	1				2				1					2	5	2			98	67	7	228
Israel	IS							2	1				3		1	1	1	1	1		2			2				11	85	3	142
Italy	IT					2	2	5					1	2	3	3	1	1			16	1	2	8		5		26	33	22	207
Japan	JP		13			1	1	6	1		1		2			1	6	13	11		4		4	9	7	1		33	146	11	390
Kuwait	KU							1																1							5
Slovenia	LV																														1
Luxembourg	LX					1							1		1	1								1				2	6	3	23
Malaysia	MA							3	2		1						1	34		3				2	3			2	3	2	89
Malta	MT																														2
Mexico	MX		1							3	2															1			12		46
Norway	NO				1			4					2	1		1	1	1			4		49	3				27	27	10	197
Netherlands	NT	3					5		2				4		2	7	4	4	3		8		10	6		3		43	84	21	312
New Zealand	NZ					1		2																				4	11	2	49
Oman	OM											1																			1
Peru	PE																											1			4
Philippines	PH		6			2																			1				2		22
Poland	PL	1													2	3					3			1		1			1	3	27
Portugal	PO			1									1								9							1	2	2	32
Russian Fed	RU							1							1							1				1		1	6		24
South Africa	SA		2					3	2				1					1	1				1	1				23	16	2	101
Singapore	SG		21			1	2	3	3		1						1		1	1	1		1	3	14	1		12	18	3	177
South Korea	SK		2				1	1	1		1	2	1		1	1	1				1				1	1		2	20	5	106
Spain	SP					7	1	4		7	1		3	10	1	1	1		1				1				1	15	24	10	159
Slovak Rep	SV																														2
Sweden	SW	2	1			2	36	20	1				5	3	1	7	5	2	2		12	1		7	1	1		55	76	25	417
Switzerland	SZ	1	4				1	8	1	2						1	1		2		3		5					30	90	20	244
Thailand	TH																	1										2	3		18
Turkey	TK															1													1		4
United Kingdom	UK	2	7	2		10	39	136	4	2	5	1	13	7	3	24	51	15	10		61	1	58	37	4	20			1034	194	2567
United States	US	8	3	1	1	42	40	104	22	7	3	2	9	3	5	11	13	25	32		35		79	71	5	3		679		263	2926
Germany	WG	1	1				7	20	1				3	1	1	1			2		10		9	19		4		51	94		322
	Total	22	72	7	2	101	173	417	130	48	25	6	77	38	33	88	124	138	81	6	222	12	296	214	52	60	1	1428	3047	775	12030