

Languages, M&A Risks and Earnouts: A Global Perspective

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Abstract: Users of strong future time reference (FTR) languages (e.g., English) are grammatically required to distinguish between future and present events, while users of weak FTR languages (e.g., Chinese) are not. This study hypothesizes that firms using weak FTR languages as working languages are prone to believing that negative events (e.g., moral hazards) in M&A transactions are more imminent and therefore have a higher degree of motivation to hedge against M&A risks. Consistent with the baseline hypothesis, I find evidence that buyers with weak FTR languages as their working languages have a higher probability to use earnouts in M&A transactions to hedge against investment risks. Next, I conduct robustness checks by altering samples. I also find that the extent of trade globalization has a negative mediating effect on the FTR-earnout mechanism. This study provides a new perspective to study the factors affecting the usage of earnouts in M&A transactions and enriches the literature in linguistics.

Keywords: Languages; M&A risks; Earnouts

1. Introduction

Strong FTR languages require that speakers must use auxiliary verbs when depicting events which will happen in the future, while weak FTR languages do not have such compulsory rule. Speakers of weak FTR languages, in most cases, use the simple present tense to describe the events that will happen in the future. Dahl (2000) maintains that strong FTR languages' grammatical requirement of distinguishing between future and present events makes speakers postpone the time when future events happen on the cognition level, while weak FTR languages without the compulsory rule make speakers think that future events are more imminent.

Based on the theory above, Chen (2013) studies the effect of language FTR on individual economic behaviors. Chen (2013) discovers that because future events are more imminent on the cognition level, speakers of weak FTR languages have more future-oriented behaviors including receiving higher level of education to get better job opportunities, accumulating more personal savings to prepare for retirement and doing more physical exercise to prevent diseases compared with speakers of strong FTR languages.

Language FTR also has an impact on firms' economic behaviors. Liang et al. (2018) maintain that organizational behaviors can also be affected by language FTR through categorization and framing effects. Prior literature discovers that firms with weak FTR languages as their working languages have more future-oriented behaviors including undertaking more social responsibility (Liang et al., 2018) to improve reputation, holding more precautionary cash (Chen et al., 2015) to hedge against risks, reducing earnings management (Kim et al., 2017) to avoid potential legal risks and increasing R&D activities to enhance long-term profitability (Liang et al., 2018). In addition, Liang et al. (2018)'s study discovers that multi-lingual or internationalized business environment can curb the effect of language FTR on firms' economic behaviors.

On the basis of corporate-level studies, this paper studies the effect of language FTR on a kind of firms' M&A behavior, namely the probability to use earnouts for preventing transaction risks. Buyers in M&A may suffer from risks incurred by information asymmetry (Datar et al., 2001) and moral hazards (Cain et al., 2011). When buyers and sellers can't agree on the price due to the existence of transaction risks, buyers will choose to sign earnout contracts with sellers (Kohers et al., 2000). Payment of the part of the price on which both sides can't reach an agreement is contingent upon the performance of targets after deals. Earnouts are the main method for buyers to hedge against M&A risks, but signing earnout contracts generates extra transaction cost. Therefore, buyers need to compare the present cost of signing contracts to future gains of avoiding risks when deciding whether to use earnouts. The baseline hypothesis of this paper maintains that buyers using weak FTR languages tend to think that M&A risks are more imminent and that future gains of avoiding risks outweigh present cost of signing contracts, therefore have a higher probability to use earnouts.

To test the hypothesis above, I construct a Logit model using M&A data from 39 countries and regions to test the difference in probability of using earnouts among buyers with different language FTR. After controlling for country-level characteristics and transaction-level characteristics, I discover that buyers using weak FTR languages have a higher chance to use earnouts to hedge against M&A risks.

This study also conducts two robustness checks by excluding the observations with buyers in the US (a country with multi ethnic groups which may bias the result) and by excluding weak and strong FTR countries with the largest number of observations to avoid the influence of specific countries' features. The results are consistent with the baseline result.

Finally, I study the meditating effect of trade globalization of buyers' home countries on FTR-earnout mechanism. First of all, under the background of trade globalization companies need to cooperate with partners with various linguistic backgrounds, which changes the cognitive pattern in the single-linguistic environment. Next, globalization makes different languages adapt to each other's grammatical rules and expressions, which enables speakers of different languages to get used to each other's way of thinking. Taken together, buyers in the countries with higher level of trade globalization can adapt themselves to thinking patterns of different languages, which curbs the effect of the single language on their M&A behaviors.

The rest of the passage is arranged as follows. The second part contains sample selection and variable measurement. The third part contains the empirical model, robustness checks and further analysis. The fourth part concludes the paper.

Sample selection and variable measurement

Table 1 Variable measurement

Variable	Measurement
Earnout	Whether the buyer uses an earnout in the M&A, 1 if yes, 0 if no.
WeakFTR	Whether the working language of the buyer is a weak FTR language, 1 if yes, 0 if no.
Cross_Industry	Whether the deal is interindustry, 1 if yes, 0 if no. Industrial division standards are US SIC two-digit codes.
Cross_Border	Whether the deal is international, 1 if yes, 0 if no.
Public	Whether the buyer purchases a public firm, 1 if yes, 0 if no.
Services	Whether the target belongs to the service industry, 1 if yes, 0 if no.
RelativeSize	The relative size of the deal, calculated as the total price of the transaction/(the buyer's equity + the total price of the transaction).
meanTobinQ	The target industry's average Tobin's Q value, calculated based on the data of all the public firms in the target industry in the target country or region.
meanGrowth	The target industry's average sales growth rate, calculated based on the data of all the public firms in the target industry in the target country or region.
meanEmployeeRatio	The target industry's average ratio of the number of employees to the value of total assets, calculated based on the data of all the public firms in the target industry in the target country or region.
meanRDRatio	The target industry's average ratio of the value of R&D expenditure to the value of sales revenue, calculated based on the data of all the public firms in the target industry in the target country or region.
lnGDPPerCapita	The natural logarithm of GDP per capita in the buyer's home country or region.
GDPGrowth	The GDP growth rate of buyer's home country or region.
English	Whether the buyer's home country or region is with English legal origins, 1 if yes, 0 if no.
French	Whether the buyer's home country or region is with French legal origins, 1 if yes, 0 if no.
German	Whether the buyer's home country or region is with German legal origins, 1 if yes, 0 if no.
UncertaintyAvoidance	The buyer's home country or region's uncertainty avoidance, measured by Hofstede's cultural index.
LongTermOrientation	The buyer's home country or region's long-term orientation, measured by Hofstede's cultural index.
Catholic	Indicator variable that is 1 if >50% of the inhabitants in the buyer's home country or region are Catholics.
Buddhist	Indicator variable that is 1 if >50% of the inhabitants in the buyer's home country or region are Buddhists.
Muslim	Indicator variable that is 1 if >50% of the inhabitants in the buyer's home country or region are Muslims.
Protestant	Indicator variable that is 1 if >50% of the inhabitants in the buyer's home country or region are Protestants.
Globalization	The buyer's home country or region's KOF trade globalization index.

The main explanatory variable in this study is a dummy variable, namely whether buyers' working languages are weak FTR languages. This indicator is sourced from EUROTYP project of European Science Foundation. This study refers to Liang et al. (2018)'s and Chen et al. (2015)'s papers to use the official language of the buyer's home country as the working language of the buyer. For a country with two or more official languages, I refer to The World Factbook and use the language that is used by the largest part of population within a home country as the working language of the buyers in that country.

The M&A data in this paper are sourced from Zephyr database. The sample ranges from 1997 to 2020. Buyers are from 39 home countries and regions, among which countries and regions officially using weak FTR languages include Belgium, Brazil, Switzerland, Chinese mainland, Germany, Denmark, Finland, Chinese Hong Kong, Indonesia, Japan, Malaysia, Netherland, Norway and Singapore. Countries and regions officially using strong FTR languages include Australia, Canada, Chile, Spain, France, the UK, Greece, Ireland, India, Italy, Jordan, Korea, Mexico, New Zealand, Peru, Philippines, Pakistan, Poland, Portugal, Russia, Turkey, the US and South Africa. In M&A transactions of this study, buyers own less than 50% of targets' total shares before transactions and eventually control targets (owning more than 50% of shares) by M&A. Target firms include listed and private firms. Based on the studies of Kohers et al. (2000), Datar et al. (2001) and Cain et al. (2011), I control for the transaction-level characteristics influencing the probability of earnout usage. Part of the data used to construct the variables are sourced from Osiris database. This study also refers to the study of Chen et al. (2015) and controls for the country-level features including economy, culture, religion and legal source. The data are sourced from The World Bank database, Hofstede website and The World Factbook website. In addition, there might be omitted variables affecting language FTR and earnout usage. Dryer (1989) maintains that languages are a part of culture and they change with the development of culture. Cultural factors can also influence firms' economic behaviors. Therefore, this study refers to the study of Chen et al. (2015) and use the fixed effect of family language based on the data from the World Atlas of Language Structures. In further analysis part, I study the mediating effect of trade globalization, which is measured by KOF trade globalization index. To avoid the influence of extreme values, I winsorize all continuous variables at 1th and 99th percentiles. Table 1 is the variable

Table 2 Descriptive statistics

Variable	Number of observations	Mean	Standard Deviation	Minimum	Maximum
Earnout	18425	0.145	0.352	0	1
WeakFTR	18425	0.351	0.477	0	1
Cross_Industry	18425	0.502	0.500	0	1
Cross_Border	18425	0.272	0.445	0	1
Public	18425	0.351	0.477	0	1
Services	18425	0.0627	0.242	0	1
RelativeSize	18425	0.250	0.277	-0.0176	1.149
meanTobinQ	18425	27.65	95.90	0.202	649.9
meanGrowth	18425	9.996	18.15	-50.92	78.77
meanEmployeeRatio	18425	2.14e-05	7.95e-05	2.17e-07	0.000644
meanRDRatio	18425	2.022	7.631	0	50.41
lnGDPPerCapita	18425	10.30	0.872	7.213	11.23
GDPGrowth	18425	3.359	7.446	-17.91	25.27
English	18425	0.585	0.493	0	1
French	18425	0.0872	0.282	0	1
German	18425	0.271	0.445	0	1
UncertaintyAvoidance	18425	0.489	0.204	0.0800	0.950
LongTermOrientation	18425	0.520	0.249	0.210	1
Catholic	18425	0.239	0.426	0	1
Buddhist	18425	0.0588	0.235	0	1
Muslim	18425	0.0333	0.179	0	1
Protestant	18425	0.269	0.443	0	1
Globalization	18425	60.60054	12.83685	34.50344	95.24313

measurement table and table 2 is the descriptive statistics table.

The empirical model, robustness checks and further analysis

This study refers to Kohers et al. (2000) and adopts a Logit model to study the probability of earnout usage.

$$P_d = E(Y_d = 1 | x) = \frac{1}{e^{-(\theta_0 + \theta_1 X_d + \theta_2 Z_d + \varepsilon_d)}}$$

P_d is the probability of using an earnout in an M&A. Y_d is the indicator that is 1 if the deal involves an earnout, X_d is the main explanatory variable WeakFTR. Z_d represents a vector of control variables and fixed effects. Because this study is based on the transactions in different countries, I cluster robust standard errors on buyers' home country or region level and show them in the parentheses. *, **, *** indicate the significant levels of 10%, 5% and 1%. As is shown in the column (1) of table 3, the baseline result is consistent with FTR-earnout hypothesis. The column (2) and (3) are robustness checks. The results are consistent with the baseline result, which means the baseline result is not subject to the influence of cultures of multi ethnic groups within the country or to the features of two main countries in the sample. The result of the column (4) is

Table 3 Empirical results

	(1) Baseline result	(2) Excluding the US	(3) Excluding the largest weak FTR and strong FTR countries	(4) The mediating effect of trade globalization
Dependent variable	Earnout	Earnout	Earnout	Earnout
WeakFTR	0.7961** (0.3612)	0.7848** (0.0136)	0.8720** (0.3387)	2.8277** (1.1155)
Globalization				0.0331** (0.0136)
WeakFTR*Globalization				-0.0320** (0.0155)
Features of transactions	Yes	Yes	Yes	Yes
Features of home country or region	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Family language fixed effect				
N	18425	14453	11861	18425
R ²	0.1982	0.2443	0.2096	0.1988

consistent with the mediating hypothesis.

2. Conclusion

This paper studies the effect of languages on firms' probability of using earnouts in M&A transactions through controlling for a vector of variables and discovers that trade globalization has a negative mediating effect on the mechanism. The baseline result passes two robustness tests. This study has practical significance. Languages make buyers overestimate or underestimate M&A risks, which make buyers take unnecessary risk aversion methods or neglect risks. To mitigate the cognitive bias induced by languages, buyers can encourage managers to master foreign languages so that they can have various thinking patterns. Buyers can also internationalize organizations, employing staff with different linguistic backgrounds.

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