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# THE IMPACT OF XBRL FILINGS TOWARDS INFORMATION ASYMMETRY: A COMPARISON BETWEEN MANDATORY AND VOLUNTARY XBRL IMPLEMENTATION

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Valentina Tohang, Jonathan Andika: The Impact of XBRL Filings towards Information Asymmetry: A Comparison between Mandatory and Voluntary XBRL Implementation-- Palarch's Journal Of Archaeology Of Egypt/Egyptology 17(7). ISSN 1567-214x Keywords: XBRL, disclosure, financial reporting technology, information asymmetry, mandatory XBRL, voluntary XBRL

### Abstract

XBRL (eXtensible Business Reporting Language) is designed for communicating business reports to all stakeholders (Wang, Wen, & Seng, 2014; Yoon, Zo, & Ciganek, 2011). The number of public XBRL disclosures is showing an increasing trend, and it is the first time the majority of countries around the world are adopting the same standards for their financial reporting technology, showing that XBRL has the potential to be a global standard for disclosures that will assist information transfer across countries. This research aims to analyze the adoption of XBRL across countries towards information asymmetry, by providing an extension of the existing research in this particular area. Further adding to the essence of the research, this paper will take into account the different levels of disclosure quality in each country and the supremacy of regulatory bodies within each country. The results of this cross-country analysis are expected to be different as determined by the XBRL reporting environment, hence affecting different levels of information asymmetry.

# **INTRODUCTION**

XBRL, also known as interactive documents by the Securities and Exchange Commission (SEC), is one type of XML reporting language (eXtensible markup language) that is designed for communicating business reports to all stakeholders (Wang et al., 2014; Yoon et al., 2011). It is a new method for disclosing both financial and non-financial information on the Web, and it allows the information to be transferred to spreadsheets and processed through analytical software. It is believed that XBRL filings will change the way stakeholders analyze the financial information (Rayner & Chandler, 2008). For instance, XBRL formatted financial reports will enable stakeholders to conduct analyses, such as a trend analysis and a ratio analysis of multiple companies for a specific range of time, easier than the usual non-interactive Web-based disclosures (Gomaa, Markelevich, & Shaw, 2011).

Hence, implementing XBRL disclosures will increase the quality of stakeholders' decision making by reducing the time needed to search for and process information.

XBRL is an open standard for disclosures and has the capability to be implemented and standardized internationally (Kernan, 2008). With the proven benefits, countries all over the world are starting to move towards XBRL implementation for disclosure-related activities which are designated for all public companies that operate in their jurisdictions. Wang et al. (2014) pointed out that it is the first time the majority of countries around the world are adopting the same standards for their financial reporting technology. To this point, the implementation of XBRL around the world is proven to be uneven. The reason for the uneven implementation of XBRL disclosures is due to the different levels of regulations imposed in each country. Countries all over the world have different progress in the implementation of regulations related to XBRL filings as a form of disclosure. Several countries (such as the U.S., China, South Korea, Japan, and India) have mandated the XBRL disclosures and required companies to submit their financial statements in XBRL format to the capital markets regularly. Others (like Canada and Australia) are still imposing voluntary XBRL disclosure programs which give freedom to companies in choosing whether or not to disclose their financial statements in XBRL format.

Since XBRL implementation is still ongoing and can be considered as a relatively new issue for some countries (Eierle, Ojala, & Penttinen, 2014; Yoon et al., 2011) this research aims to further investigate the effects of different XBRL reporting environments in different countries (a mandatory XBRL reporting environment versus a voluntary XBRL reporting environment) towards the level of information asymmetry in the capital market'.

The paper is structured as follows: the next section is the theoretical background on the XBRL reporting environment and its impact on information asymmetry. It is followed by the research design, findings and discussion, and conclusion.

### LITERATURE REVIEW

#### **XBRL:** Improving the Quality of Corporate Disclosures

The XBRL format uses unique identifying tags for each kind of financial data inside the documents which enables the data to be specifically identified, sorted, and automatically extracted by various analytical software programs (Li, Roge, Rydl, & Crews, 2006)Y. Each unique tag is developed and standardized based on the accounting standards and stored in the taxonomies (data dictionaries) (Chen, 2012).

The implementation of XBRL has been proven to bring several benefits to both preparers and users of financial reports. Through the use of tags, XBRL enhances the speed of managing and preparing financial data as well as minimizes the probability of human error (Chen, 2012; Li et al., 2006). This feature supports the production of timely and accurate financial data to the public, which ultimately will satisfy its stakeholders' (i.e. investors') needs (Yoon et al., 2011). Additionally, it enhances the company's information visibility by increasing the information accessibility in the capital market (Wang et al., 2014; Li et al., 2006). Considering all the

benefits mentioned, the use of standardized XBRL formatted documents will make it easier for analysts, investors, and other relevant stakeholders to access, collect, and analyze the publicly disclosed information. Hence, it can result in an increase in the firm's information transparency.

# XBRL Reporting Environment in the U.S.

The initiatives to disclose XBRL financial reports in the United States have been implemented since March 16<sup>th</sup>, 2005. These movements towards XBRL disclosures were primarily driven by the need to improve the accessibility and usefulness of a company's financial data (Li, Ni, & Lin, 2012)

Several years after the voluntary filing program, based on the positive feedback obtained from this particular program, the SEC decided to issue its final rule related with the implementation of mandatory XBRL filings for all public companies in the U.S., which was effective starting in early 2009 (SEC Final Rule, Release No. 33-9002; Blankespoor, Miller, & White, 2014). With these new mandatory filing regulations, firms were required to submit the XBRL documents as well as the official documents to the SEC. These documents include a firm's financial statements with its registration statements, current reports, periodic reports, transition reports, as well as Form8-K or Form6-K that contain updated or revised versions of financial statements (Li et al., 2012; SEC Final Rule, Release No. 33-9002). To ensure the conformity of all firms, the SEC mandated severe punishments for those firms that fail to adhere to the final rules (SEC Final Rules, Release No. 33-9002).

### **XBRL Reporting Environment in India**

The movement towards XBRL filings started and has vastly developed in India since January 2007. This development of the new reporting language was initiated after the announcement from the Institute of Chartered Accountants of India (ICAI hereafter) stating that it would form a committee of regulators with an aim of promoting XBRL in this country (Chotaliya, 2014). This movement towards XBRL adoption was an integral part of the E-Governance Project of the Ministry of Corporate Affairs (MCA hereafter) that had begun in 2006.

Similar with the U.S. SEC, the MCA has implemented a phase-in approach for XBRL adoption in India. For the first step, the MCA has imposed mandatory requirements for companies to submit their financial statements in an XBRL format for the period ending on March 31<sup>st</sup>, 2011 (Chotaliya, 2014; Kant, & Kumar, 2011).

# **XBRL Reporting Environment in Canada**

Different with the current reporting environment in the U.S. and India, Canada is still in the stage of a voluntary filing program. This voluntary program was initially implemented in the beginning of May 2007. The Canadian Securities Administrator (CSA), in its CSA Notice 51-323, launched a program that invited firms to voluntarily submit their financial reports in an XBRL format to the System for Electronic Document Analysis and Retrieval (SEDAR).

# The Relations of Corporate Disclosures to Information Asymmetry

Earlier studies indicated that information asymmetry exists when one party has more or better information compared to the others (Yoon et al., 2011; Grewal, Iyer, Krishnan, & Sharma, 2003). Leuz and Verrecchia (2000) argued that the existence of information asymmetry will increase the transaction costs by bringing in adverse selection into the buying and selling process of a firm's shares. Adverse selection is defined as a condition where the seller (buyer) is exposed to various information that the buyer (seller) does not have. Verrecchia (2001) also added that the increase in information asymmetry will make the firm's shares costlier, and hence, increase the firm's cost of capital.

Insufficient corporate information that is disclosed in the capital market will create inefficiencies in the process of information transfer among different parties (the company to investors as well as investors to other investors); hence, it is believed to be the primary cause of information asymmetry (Yoon et al., 2011; Grewal et al., 2003). Leuz and Verrecchia (2000) and Diamond and Verrecchia (1991) believed that one of the possible way to decrease this information asymmetry is through increasing the quantity and quality of corporate disclosures in the capital market. Supporting this argument, through their empirical findings, Fu, Kraft, & Zhang (2012) discovered that an increase in disclosure frequency (both quantity and quality) will reduce the information asymmetry; therefore, it will lead to a firm having a lower cost of capital (Petersen & Plenborg, 2006; Leuz & Verrecchia, 2000; Diamond & Verrecchia, 1991). Additionally, providing higher quality and quantity corporate disclosures will increase information accessibility and transparency to the users; hence, it will enable investors to gain more knowledge and make more informed investment decisions (Yoon et al., 2011)

Information asymmetry is also believed to be affected by different reporting environments and its disclosure-related regulations (Li et al., 2012). In a country where corporate disclosures are strictly regulated, companies are required to disclose more items in their financial reports; hence, it will result in lower information asymmetry. This can be explained through the situation where companies are encouraged to present and submit more complete information, which later will enrich the market with greater information availability. Higher information availability will increase information transparency and potentially increase the equal spread of information across different users of financial statements and decrease the adverse selections among buyers and sellers of a company's shares (Petersen & Plenborg, 2006; Leuz & Verrecchia, 2000; Diamond & Verrecchia, 1991). Therefore, it will result in lower information asymmetry.

In contrast with the majority of viewpoints, Blankespoor et al. (2014) found that the mandatory adoption of XBRL filings in the U.S. had caused an increase in the degree of information asymmetry. They had conducted their research to measure the effects of XBRL adoption to the degree of information asymmetry and collected their samples from 666 U.S. public firms (333 pre-XBRL adoption and 333 post-XBRL adoption) from June 15th, 2008, to June 14th, 2009. To justify their findings, Blankespoor et al. (2014) argued that XBRL disclosures will bring more benefits to large investors than small investors. These large investors are believed to have better skills and abilities in using the current technology to utilize XBRL

documents than small investors. Since the benefit of increasing the information processing capabilities of XBRL formatted documents can only be achieved through the use of current technology, it will be disadvantageous for some (small) investors who are reluctant or unable to adapt to these changes. Thus, there will be information gaps between these investors, which will then increase the degree of information asymmetry in the capital market.

These contrasting findings from several prior studies have primarily motivated the authors to conduct a further study in the adoption of XBRL. By means of providing extensions of the existing prior research in this particular area, this paper intends to expand the context of the research by considering a cross-country analysis (U.S., India, and Canada) of XBRL adoptions. Further adding to the essence of the research, this paper will measure the degree of information asymmetry within these three countries that have different exposures to XBRL reporting regulations (mandatory and voluntary). Furthermore, it is also believed that through the set of strict regulations imposed in a mandatory XBRL reporting environment, it will enhance the effect of information asymmetry reduction in the capital market compared to the voluntary XBRL reporting environment. Through this set of framework, this paper is constructed on the basis of the following hypothesis: Companies operating in a mandatory XBRL reporting environment will have a lower degree of information asymmetry compared to companies in a voluntary XBRL reporting environment.

#### **Proxies and Models Used to Measure Information Asymmetry**

The three proxies introduced by (Leuz & Verrecchia, 2000) are considered as the most commonly used proxies in various literature developed. These proxies are trading volume, bid-ask spread, and stock price volatility.

Another relevant model was used by (Yoon et al., 2011) in measuring the degree of information asymmetry towards the pre- and post- adoption of XBRL in Korea. (Yoon et al., 2011) used a bid-ask spread as the proxy of measuring the degree of information asymmetry and added four other control variables (i.e. size, turnover, volatility, and stock price).

From these different proxies, this study adopted *trading volume* as the method for analyzing the degree of information asymmetry. In terms of the research model development, the authors attempted to synthesize two previous models proposed and used by Yoon et al. (2011) as well as Leuz & Verrecchia (2000) to assist in determining the independent and control variables. From the information asymmetry (trading volume) model of Leuz and Verrecchia (2000), the authors analyzed all variables that have a close association with the degree of information asymmetry and selected the variables that are highly suitable for supporting the research. In addition, to add to the essence of XBRL adoption into the model, the authors acknowledged additional variables used from the model proposed by Yoon et al. (2011).

#### MATERIALS AND METHODS

This research utilized public companies listed in U.S. stock exchanges (i.e. NYSE, NASDAQ), India's stock exchange (i.e. NSE), and Canada's stock exchange (i.e. TSX) from the period of July 1<sup>st</sup>, 2011, to December 31<sup>st</sup>, 2013, as the population of this research. This time frame was selected due to

several underlying reasons, mainly: (1) the U.S. implemented mandatory XBRL filings for all companies for the fiscal period ending on June 15<sup>th</sup>, 2011; India implemented its first phase-in mandatory XBRL filing regulations starting from the period ending on March 31<sup>st</sup> 2011; (2) Canada has already been implementing its voluntary filings since 2007. The authors also believed that collecting data within this range of period would be sufficient to observe the effects of different XBRL reporting environments towards information asymmetry in the capital market.

As the first step of the sample collection to satisfy the first research objective, the authors observed and analyzed the number of companies operating in a voluntary XBRL reporting environment (Canada), specifically for those companies that had disclosed their XBRL formatted financial statements to SEDAR at least once. Referring to the CSA SEDAR system database, it is noticed that 24 companies submitted their financial statements in XBRL format. However, through acknowledging the sample criteria mentioned, the total number of these companies was further reduced to 14 companies. The authors excluded 10 companies, as 5 companies had incomplete corporate information and 5 others were not listed in TSX. These 14 companies, with varying company sizes (measured with total assets) from U.S. \$5,000,000 to \$1,000,000,000, were then selected as samples representing a voluntary XBRL reporting environment.

The matching firms method, based on size (total assets), was employed during the process of the sample collection in the mandatory XBRL reporting environment (U.S. and India) with the purpose of increasing its comparability to the samples collected from the voluntary XBRL reporting environment (Canada). This method allowed for the pairing of each Canadian company to 2 other similar sized U.S. companies and 1 similar sized Indian company. As stated in Section 12(g) of the Securities Exchange Act, U.S. publicly listed companies are required to have total assets exceeding \$10 million on the last day of the company's financial year end. This will in turn cause the previously collected samples of 14 Canadian companies having total assets less than \$10 million to be removed. Hence, in total there were 8 samples of Canadian companies representing the voluntary XBRL reporting environment and 24 sample companies (composed of 16 U.S. and 8 India companies) representing the mandatory XBRL reporting environment. This specific number of U.S. and Indian companies collected was purposely chosen by the authors since it was believed this number of samples would be suitable with a limited research time yet still represent the mandatory reporting environment in the U.S. and India. It was also believed that the use of this method would reduce the possibility of outliers in the total samples collected.

Through synthesizing the two models used by Yoon et al. (2011) and Leuz and Verrecchia (2000), the authors arrived at one unified research model that was used for the multiple regression analysis of this research.

 $TRD_VOL_{it} = \beta_0 + \beta_1 XBRLenv_{it} + \beta_2 Size_{it} + \beta_3 Volatility_{it} + \beta_4 StockPrice_{it} + \varepsilon_i$ 

Where:

IRD_VOLit XBRLenvit	=	Weekly shares trading volume of firm i at time t XBRL Reporting Environment; dummy variable (0 for voluntary regulated environment [Canada]; 1 for mandatory regulated environment [U.S. or India])
Sizeir	=	Average market value of equity of firm i at time t
Volatilitvit	=	Average weekly stock price volatility of firm i at time t
StockPriceit	=	Average weekly stock price of firm i at time t
8	=	Error
į	=	Indicates company that operates in either
		mandatory or voluntary regulated countries
t	=	Reporting period

This research model has one independent variable (*XBRLenv*) and three control variables (*size*, *volatility*, and *stock price*). *XBRLenv* is considered as a dummy variable and the main explanatory variable within the research model. The authors intentionally selected 0 to represent the voluntary XBRL reporting environment and 1 for the mandatory XBRL reporting environment since the treatment of regulations in the voluntary environment were relatively loose compared to the mandatory ones. The other three control variables were selected and used by the authors since it was believed to have a close association with information asymmetry and expected to explain the variance in its degree (Yoon et al., 2011; Leuz & Verrecchia, 2000).

The first control variable used in the regression model was *size*, which was measured through the market value of equity for a particular company. The next control variable used was *volatility*. The value of this variable was obtained from the difference between the highest and lowest amount of weekly stock prices divided by the average highest and lowest weekly stock prices. The last control variable used was the *stock price*, which indicated the weekly adjusted closing stock prices of the company's shares.

### **RESULTS AND DISCUSSIONS**

This section presents the research findings and the discussion. The first analysis conducted is the descriptive statistics as presented in Table 1 below.

Variables	TRD_VOL	XBRLenv	Size	Volatility	StockPrice
Mean	0.002806302	-	19.14079110	0.088077787	4.5205
Median	0.001701000	-	19.23564576	0.080862548	3.9300
Std.dev	0.0029325479	-	0.7110452953	0.0386849128	3.17326
Min	0.0000010	0	17.2663499	0	0.31
Max	0.0107980	1	20.6055607	0.1933086	13.11
Frequency of Value 0	-	644	-	-	-
Frequency of Value 1	-	1948	-	-	-

 Table 1. Descriptive Statistics

Based on Table 1, the trading volume variable (TRD VOL) reflects the willingness of investors to invest in trading companies' shares. The minimum value of trading volume (0.0000010 or 0.0001%) belongs to a Canadian company named U.S. Geothermal Incorporated; while the maximum value (0.0107980 or 1.07980%) is owned by a U.S. company named Taser International Incorporated. These differences in minimum and maximum values represent a large range in trading volume possessed by the sample companies collected. This large range among the samples may be due to the different reporting environments which can result in different degrees of information asymmetry. As seen from the results, the minimum value is owned by Canadian company operating within the voluntary XBRL reporting environment, which is believed to have a relatively high level of information asymmetry; and thus, it is expected to have a low trading volume. On the other hand, the maximum value of trading volume is owned by U.S. company (mandatory XBRL reporting environment), which is believed to have low information asymmetry; hence, it is expected to have a high trading volume (Yoon et al., 2011; Leuz & Verrecchia, 2000).

The variable XBRLenv is a dummy variable that is used to represent different XBRL reporting environments. From the total observations of 2,592 pieces of data, there are 644 weekly data items representing the voluntary XBRL reporting environment and 1,948 weekly data items representing the mandatory XBRL reporting environment.

The first control variable, size, represents the average market value of a company. By looking at the mean value of this variable (19.14079110 or USD 205,465,994) and comparing it to the minimum (USD 31,526,843) and maximum (USD 888,958,135) values, it can be concluded that the majority of the samples have a relatively small market value (size). The second control variable, *volatility*, represents the average weekly stock price volatility of a company. It shows the degree of risk or uncertainties in the capital market. The differences in the values show the variability in the degree of risks borne by the sample companies. The majority of the samples collected have a relatively low volatility (or considered as less volatile) as the mean value (0.088077787) is located near the median (0.080862548) and slightly below the middle point between the maximum and minimum values. The third control variable is stock price (expressed in USD), which shows the weekly adjusted closing stock prices of a company. The differences in the maximum and minimum values reflect the variability of the sample companies' stock prices. Observing from the results of the mean (4.5205), median (3.9300), minimum, and maximum values, it can be concluded that the majority of the samples have relatively low stock prices.

Table 2. Correlation Matrix

	TRD_VOL	XBRLenv	Size	Volatility	StockPrice
TRD_VOL	1				
XBRLenv	0.382** (0.000)	1			
Siz e	0.242** (0.000)	0.179 ** (0.000)	1		
Volatility	0.220** (0.000)	-0.137** (0.000)	-0.118** (0.000)	1	
Stock Price	0.201** (0.000)	0.166 ** (0.000)	0.567** (0.000)	-0.145** (0.000)	1

\*\*significant at the 0.01 level (1-tailed).

Number in bracket indicates p-value

Based on Table 2, the correlation matrix shows that all the independent variables (XBRLenv, size, volatility, and stock price) have a significant and positive relationship with the dependent variable (TRD\_VOL). The positive correlation of 0.382 between XBRLenv and TRD\_VOL is as expected since it is believed that stricter XBRL reporting regulations (mandatory [0] over voluntary [1]) will result in a higher trading volume, which indicates a lower level of information asymmetry.

The results of the main analysis are reported in Table 3 below. The results show the adjusted  $R^2$  for this model is 26.8%. Additionally, the F-test confirms that the model is considered statistically valid.

 Table 3. Results of the Regression Analysis

Independent	Model				
Variables	Coefficient	t-stat (p-value)	VIF		
Constant	-0.014	-8.852	_		
Constant	-0.014	(0.000)*	-		
XBRI any	0.380	22.050	1.053		
Abriteny	0.560	(0.000)*	1.000		
Siza	0.157	7.666	1 401		
0.00	0.127	(0.000)*			
Volatility	0 304	17.737	1 036		
,		(0.000)*			
StockDrice	0.092	4.489	1 404		
Stocki ince	0.052	(0.000)*	1.121		
Adj Rª	26.8%				
F-statistic	237.628				
Prob (F-Statistic)	(0.000)				

#### \*significant at $\alpha = 1\%$

Based on Table 3, this result reflects that the level of information asymmetry in countries implementing a mandatory XBRL reporting environment (in this case the U.S. and India), measured by the trading volume (which is negatively correlated with information asymmetry), is significantly lower than countries with a voluntary XBRL reporting environment (Canada), which supports the hypothesis.

This finding is supported by developed theories which state that the stricter the regulations related with XBRL filings (mandatory over voluntary), the more timely and complete information will be published in companies' XBRL formatted financial statements. In the end, this lowers the information asymmetry in the capital market and increases the intention of investors to buy and sell companies' shares, as indicated in the increase in the amount of trading volume (Yoon et al., 2011; Leuz & Verrecchia, 2000).

Additionally, also agreeing with the theories and prior findings of Leuz and Verrecchia (2000), the coefficient for firm size (size = +0.157) shows a positive and significant value in relation to the dependent variable. This result indicates that the larger the firm, the higher the media and analysts' attention will be directed to that particular firm, and thus, the more transparent the firm will be. This situation will then result in a lower level of information asymmetry for large sized firms, which increases the investors' attention in trading firms' shares, as shown by the increase in the amount of trading volume.

The coefficient for *volatility* (0.304) shows a positive and significant relationship with the dependent variable, which contradicts the previous studies. However, this finding is supported by the views of Choi et al. (2012), who stated that both volatility and trading volume are closely related and are driven by the same factor, which is information arrival. This understanding reflects that the volatility and trading volume will increase when there is an arrival of new information; and the more information that is distributed in the market, the lower the level of information asymmetry will be.

In terms of the *stock price* variable (0.092), the positive and significant relationship indicates that an increase of a company's stock price will lead to an increase of trading volume, which shows a reduction in information asymmetry. This result is supported by the research of Pathirawasam (2013), which indicates that there might be investors who are very optimistic about the stock's value. These investors' actions will then attract other investors' attention to that particular stock, which in the end will increase the overall stock attractiveness. These factors will lead to an increase in both trading volume and stock prices. Additionally, as investors purchase that particular stock; and therefore, it will reduce the level of information asymmetry.

### CONCLUSIONS

XBRL has been growing rapidly around the world as a new standard format for financial reporting. This concept is relatively new to the literature world and has attracted various research to be conducted in this particular area. Several prior studies have proven that the adoption of XBRL financial reporting in various countries (such as the U.S. and South Korea) has brought many advantages to the users of financial reports; where one of the benefits include lowering the level of information asymmetry in the capital market (Li et al., 2012; Yoon et al., 2011; Kim, Kim, & Lim, 2013; Leuz & Verrecchia, 2000).

The implementation of XBRL reporting around the world, however, can be considered as uneven, where some countries have already imposed mandatory XBRL reporting requirements, while others are still in the stage of voluntary XBRL reporting. From the authors' perspective, the outcome of this research is considered to be extended to Indonesia since the country is in the progress of implementation and according to a study by Djakman, Siregar, and Harahap (2017), the level of corporate governance disclosure in

Indonesia is relatively low, meaning that the level of disclosure is considered to vary greatly across firms. These different treatments in regulations related with either corporate or XBRL disclosures is believed to result in different outcomes. Unfortunately, most of the prior studies have only focused their research within the context of one country and one reporting environment in a longitudinal basis. Little academic attention has been given in terms of analyzing the different effects of different reporting environments.

The results of the testing show a positive and significant relationship between XBRLenv and the dependent variable (TRD\_VOL). This result reflects that the stricter the XBRL reporting environment (mandatory over voluntary), the lower the level of information asymmetry, which is shown by the increase in trading volume. Therefore, it is true to say that companies operating in a mandatory XBRL reporting environment will have a higher trading volume (lower information asymmetry) than companies operating in a voluntary XBRL reporting environment.

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