NON-GAAP EARNINGS DISCLOSURES FROM U.S. CROSS-LISTED FIRMS[1]

ABSTRACT

Whether non-GAAP earnings (NGE) reporting is an overall informative practice is still a "gray sky". To enlighten the debate and help explain the motives behind the sudden increase in NGE measures practices around the globe, we focus on international data and examine whether NGE disclosures behavior is conditional on the reporting channel for a cross-listing setting. This is the third paper to examine a sample of U.S. cross-listed firms in the non-GAAP literature. We also are the first, as complementary analysis, to conduct a multiple correspondence analysis (MCA) over non-GAAP qualitative data to examine the association between a firm's home-country and NGE emphasis and magnitude. Results suggest that home-countries institutional factors of U.S. cross-listed firms *do not* influence, in a significant way, their reporting incentives to disclose NGE in a different way in their local annual reports, when compared to Form 20-F disclosures. Other results show that (i) cross-listed firms adopting U.S. GAAP are more highly associated with high adjustments values; and (ii) that they provide frequent adjustments that are commonly described in the past literature: impairment, net equity investment, stock option and share-based compensation expenses. We contribute to the non-GAAP literature with a novel approach, showing that home-country reporting incentives of cross-listed firms do not play a significant role in defining NGE firm-level voluntary disclosure.

Keywords: Non-GAAP measure; Non-GAAP earnings; EBITDA; Cross-listing.

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1. INTRODUCTION

In this paper we compare non-GAAP earnings ("NGE") disclosures of two annual reports for one sample of U.S. cross-listed firms: (i) Form 20-F (listing-country annual report) and (ii) Local annual report as disclosed outside of the U.S. (home-country annual report).

Unlike past literature that uses a matched sample to compare results between cross-listed and non-cross-listed firms or U.S. firms (Solsma & Wilder, 2015; Sang & Hinkel, 2022), we use one U.S. cross-listed sample and analyze two different annual reports to examine if home-country reporting incentives do play a role in determining firm-level disclosures.

As a complementary analysis, we then conduct a multiple correspondence analysis (MCA), a multivariate exploratory technique, to examine the association between a firm's home-country and other three qualitative variables: (i) non-GAAP frequency (proxy for NGE emphasis); (ii) non-GAAP value; and (iii) non-GAAP adjustments value. By providing such evidence we enhance the discussion about the influence of home-country reporting incentives over NGE disclosures by looking at emphasis and magnitude NGE qualitative data. Finally, we provide new descriptive evidence over NGE disclosures in a cross-listing setting.

Gagnon and Karolyi (2010) define "cross-listing" as "a strategic choice made by a firm to secondarily list its shares trading in a home market exchange on a new overseas market." (p. 1). The cross-listing choice can be explained by the bonding hypothesis (Coffee, 1999; Stulz, 1999), which states that foreign firms do so to minimize their home-country weaker institutional factors and "bond" themselves in the USA, as they are covered by the Securities and Exchange Commission (SEC) stricter enforcement and commit "to provide fuller financial information in response to SEC requirements" (p. 2).

Cross-listing scenario is a distinct setting for cross-country-based research. Institutional differences between the home-country and the listing-country are expected to impact financial reporting outcomes. Home-country laws and enforcement, regulation, arrangements and market forces of cross-listed firms are generally more fragile than the U.S. scenario, leading to different reporting incentives that may shape their reporting behavior in the cross-listing context (Leuz, 2006; Holthausen, 2009).

There is evidence that GAAP earnings data of cross-listed firms are more managed, less timely recognized and present lower value relevance when compared to U.S. firms, when both groups apply U.S. GAAP in the preparation of financial statements (Leuz, 2006). Though, when U.S. cross-listed firms are compared to non-cross-listed firms with headquarters in the same countries, results suggest that the U.S. enforcement matters as cross-listed firms engage in less earnings management (Holthausen, 2009).

In this sense, Leuz and Wysocki (2016, p. 577) affirms that "U.S. cross-listings are a way for firms to provide additional reassurance to outside investors" because U.S. foreign firms are subjected to their laws and enforcement. Also, they are required to provide "certain disclosures (in Form 20-F) that are not necessarily required in firms' home countries" (p. 576).

Purkayastha and Kumar (2021) review the cross-listing literature based on a systematic review and concluded that the foreign listing literature is a fragmented

research field and, thus, has a "huge scope for interesting future research" (p. 1). They explain past literature is divided between the antecedents and outcomes of cross-listing, with few context-specific investigation. The only cited research on voluntary disclosure from cross-listed firms is Shi, Magnan and Jeong-Bon (2012). They examine one type of voluntary disclosure (management earnings forecasts) for a U.S. cross-listed sample, suggesting that firm's home-country factors, like the strength of legal institutions, influence the reporting choice of voluntary disclosures.

Evidence has suggested that those reporting incentives also affect non-GAAP reporting (Marques, 2017; Black, Christensen, Ciesielski & Whipple, 2018; Clinch, Tarca & Wee, 2022). Solsma and Wilder (2015) extends previous research on pro forma disclosures from U.S. cross-listed firms (Epping and Wilder, 2011) by investigating disclosure behavior differences for foreign firms reporting under IFRS when compared to foreign firms and U.S. firms under U.S. GAAP. Their results suggest that US-listed foreign firms applying IFRS are more likely to disclose a pro forma measure than US firms and US-listed foreign firms applying US GAAP.

Sang et al. (2022) examine non-GAAP earnings and managerial incentives of cross-listed firms in the USA and U.S. firms. They conclude (p. 148) that "cross-listed firms do not behave in the same manner as U.S. firms in reporting segment earnings" because of existing incentives, like weaker investor protection. Their results suggest that cross-listed firms are more likely to use non-GAAP earnings in an opportunistic way.

The non-GAAP literature for cross-listing firms is very scarse. As indicated above, only Solsma and Wilder (2015) and Sang et al. (2022) examined NGE in this setting. Shi et al. (2012) also points that there are few studies that investigate voluntary disclosures for cross-listed firms: "The extant literature focuses either on the cross-listed firms' financial reporting quality or on the mandatory reporting requirements by US exchanges and other regulatory bodies" (p. 145). We answer their research call and explore whether home-country factors of cross-listed firms do play a role in defining firm-level voluntary disclosure (proxied by non-GAAP earnings).

Also, it is interesting to highlight that, in general, non-GAAP literature lacks evidence on international data, considering both country-specific perspective and cross-country perspective. In a much recent literature review Herr, Lorson and Pilhofer (2022) documents that more than 80% of all published papers on non-GAAP measures consider USA (60%) and European (22%) firm samples.

We investigate, with an exploratory approach and considering inherent sample size limitation, associations not previously examined by past scholars. To the best we know, this paper is the third to examine a sample of U.S. cross-listed firms in the non-GAAP literature and the first to (ii) examine whether NGE disclosures of U.S. cross-listed firms reported on Form-20F differ from local NGE disclosures reported on annual report for the same firms to investigate if NGE disclosures are conditional on the reporting channel; and to (iii) conduct a correspondence analysis over non-GAAP qualitative data to examine the association between a firm's home-country and three qualitative proxies for NGE emphasis and magnitude.

Results suggest that home-countries institutional factors of U.S. cross-listed firms *do not* influence, in a significant way, their reporting incentives to disclose NGE in a different way in their local annual reports.

Multiple correspondence analysis over U.S. cross-listed NGE disclosures provides mixed results, as firms from countries with weaker and stronger institutional and economic factors are highly and lower associated to all three non-GAAP qualitative variables (NGE emphasis, NGE value and NGE adjustments value). However, specifically for U.S. GAAP adopters, we find that they are more highly associated with high adjustments magnitude. We also find that U.S. cross-listed firms provide adjustments (types and magnitudes) like those described in past literature (for both U.S. and international samples): impairment, net equity investment and stock option/share-based compensation expenses.

We provide (i) first descriptive results from comparative annual data from NGE disclosures of U.S. cross-listed firms; (ii) first multiple correspondence analysis results over NGE; and (iii) insights on existing research on the relation between NGE and cross-listing, which are few.

This paper is organized as follows: Section 2 discusses the theoretical background. Section 3 presents the methodological procedures and our research design. Section 4 provides descriptive evidence and empirical results, and Section 5 conclusions and final remarks.

2. NON-GAAP REPORTING SCENARIO FOR FOREIGN FIRMS CROSS-LISTED IN THE USA

The Securities and Exchange Commission (SEC) imposes many requirements to U.S. and foreign firms that decide to disclose non-GAAP numbers in different communication channels, as earnings calls, press releases, SEC filings and media interviews (Brown, 2020).

Foreign private issuers (FPIs) are eligible, under SEC basic rule 6120, to use Form 20-F to provide annual results and disclosures, subjected to Regulation S-K 10(e) with respect to the use of non-GAAP measures (SEC, 2008; SEC, 2011).

Note that the requirements and prohibitions for U.S. firms and FPIs disclosing NGE in Form-20F and 10-K (annual reports) are the same:

Table 1 - Regulation S-K 10(e) requirements and prohibitions

Requirements	Prohibitions
Presentation, with equal or greater prominence, of the most directly comparable GAAP measure.	Excluding charges or liabilities that required, or will require, cash settlement, or would have required cash settlement absent an ability to settle in another manner, from non-GAAP liquidity measures. This prohibition does not apply to EBIT and EBITDA used as liquidity measures.
A reconciliation of the differences between the non-GAAP measure and the most directly comparable GAAP measure.	Adjusting a non-GAAP performance measure to eliminate or smooth items identified as non-recurring, infrequent, or unusual, when (1) the nature of the charge or gain is reasonably likely to recur within 2 years or (2) there was a similar charge or gain within the prior 2 years.
A statement disclosing the reasons why management believes the presentation of the non-GAAP measure provides useful information to	Presenting non-GAAP financial measures on the face of the GAAP financial statements or in the notes.

investors regarding the registrant's financial condition and results of operations	
To the extent material, a statement disclosing the additional purposes, if any, for which management uses the non-GAAP measure.	Presenting non-GAAP financial measures on the face of any pro forma information required to be disclosed by Article 11.
-	Using titles or descriptions of non-GAAP measures that are the same or confusingly similar to GAAP titles.

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Brown (2020) resumes that FPI's requirements that are subjected to Regulation S-K 10(e) is the same for U.S. firms as they must provide a quantitative non-GAAP reconciliation to the most directly comparable GAAP metric, must give GAAP metric equal or greater prominence and provide qualitative information about why the non-GAAP measure is useful.

Nevertheless, there are some exceptions (Brown, 2020, p. 147):

> "cross-listed foreign firms are exempt from Regulation G if all of the following three conditions are met: (1) the company's stock or debt securities are listed on an exchange outside of the U.S., (2) the non-GAAP metric is not derived from or based on a measure prepared and presented under U.S. GAAP, and (3) the non-GAAP metric was disclosed outside of the U.S. These exemption criteria will still apply even if the non-GAAP metric is disclosed concurrently or shortly thereafter in the U.S., as long as individuals located in the U.S. are not the intended primary target of the disclosure communication.".

Note that the third exception – "the non-GAAP metric was disclosed outside of the U.S." – implies there's a practical possibility for cross-listed firms in U.S. exchanges to disclose non-GAAP measures in their home-country reports (i.e., annual reports) but not report them in U.S. reports (i.e., SEC filings), or that there may be differences between those disclosures[2].

From that exception and considering the institutional theory framework, following Shi et al. (2012), we built the main paper's research design. As they argue, voluntary disclosures in the U.S. that are a common reporting practice may encourage foreign firms to voluntarily converge with US practices.

This is the exact case of non-GAAP measures reporting, where much descriptive evidence has consistently indicated an increasing trend in the frequency of non-GAAP measures. Black et al. (2018, p. 2) states that "The growth in these non-GAAP metrics over the past twenty years reflects a widespread acceptance of non-standard performance metrics as a way to evaluate firm performance.".

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[2] We consulted an investor relations expert (see https://www.linkedin.com/in/andrelcvasconcellos/) about voluntary reporting incentives in a cross-listing setting, specifically about the possibility that U.S. cross-listed firms present voluntary data in different ways, conditional on the reporting channel. Based on his professional expertise and to the best he knows, it is plausible that cross-listed firms present the same data (like adjusted earnings) in different ways when comparing SEC filings and home-country filings due to some institutional factors, as for example: the reporting protocol may differ from one country to another; there are more/less sophisticated reporting settings; investors may demand different information; etc. He understands there is flexibility in the way cross-listed firms prepare disclosures as required by interested parties and by following the reporting protocol traditionally accepted in local markets. We thank André Vasconcellos for the discussion and professional knowledge sharing.

As Shi et al. (2012) explain, "institutional theory implies that cross-listed firms face dual pressures from both host and home countries." (p. 144). As it is expected that U.S. cross-listed firms face more general financial reporting regulation and more specific non-GAAP reporting regulation, when compared to their home-countries institutional system, they face more market pressure to follow such regulation and disclosures practices.

In line with Shi et al. (2012) overall result and based on Regulation S-K 10(e) exemption criteria, *we expect U.S. institutional factors influence the reporting incentives of cross-listed firms to converge with non-GAAP disclosures practices in both annual reports (Form 20-F and local annual report).*

The underlying premise is that home-country institutional factors *do not* influence, in a significant way, the reporting incentives of cross-listed firms to disclose non-GAAP earnings in a different way in their local annual reports. This implies that NGE disclosures of U.S cross-listed firms *do not* differ conditional on the type of annual report's reporting channel due to the stronger U.S. market forces over firms financial reporting.

3. METHODOLOGICAL PROCEDURES

3.1 Sample selection approach

Sampling procedures start from all not financial[3] public firms from G20 countries (G20, 2021) that are cross-listed in U.S. exchanges. We focus on foreign private issuers (FPIs) listed on NASDAQ or NYSE.

Cross-listed firms from the G20 setting was selected for several reasons: (i) first, like past scholars, we identified a lack of NGE evidence from firms in countries other than USA, Australia and European countries; (ii) second, cross-listing setting is a unique setting to examine reporting incentives; (iii) third, G20 countries represent the most relevant economies of the world (G20, 2021).

We use a two-step approach for sampling firms:

(i) <u>Foreign private issuers (FPIs) from G20 countries listed on U.S. exchanges NASDAQ or NYSE</u>: An "FPI" is a foreign national or a corporation or other organization that is incorporated or organized under the laws of any foreign country (SEC, 2008). This definition comprises firms "dual listed" in their exchange home country and in north american exchanges. We select FPIs firms from Top Foreign Stocks (2023) website.

(ii) <u>U.S. firms listed on NASDAQ-100 index</u>: As american firms are not FPIs but United States is comprised in the G20 economies, We select U.S. firms from the NASDAQ-100 index.

3.2 Sample selection criteria

We identify FPIs from G20 countries listed on NASDAQ or NYSE exchanges by consulting Foreign Stocks (2023) website on February the 24th, 2023. This site provides an updated list of all ADRs trading on U.S. exchanges by country.

The consultation returned 359 non-financial FPIs distributed like shown below:

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[3] We exclude non-financial firms because such industry do not use EBITDA as a performance measure.

Table 2 - Number of FPIs by country

Region	Country	FPIs	%
Africa	South Africa	7	1.9%
South America	Argentina	12	3.3%
	Brazil	23	6.4%
North America	Canada	71	19.8%
	United States	-	-
	Mexico	12	3.3%
Asia	China	126	35.1%
	India	5	1.4%
	Indonesia	1	0.3%
	Japan	9	2.5%
	South Korea	6	1.7%
	Saudi Arabia	-	-
	Turkey	2	0.6%
Europe	France	13	3.6%
	Germany	9	2.5%
	Italy	4	1.2%
	Russia	7	1.9%
	United Kingdom	38	10.6%
Oceania	Australia	14	3.9%
Total		**359**	**100%**

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We followed past researchers (Isidro & Marques, 2015; Choi & Young, 2015) and focus on the most valuable firms. Based on the latest market capitalization available on Capital IQ database, as of February the 24th, 2023, and measured in USD billions, we chose the "Top 05" most valuable firms of each country. After "Top 05" criterion, Italy, Turkey and Indonesia were disregard for having less than 5 firms and the procedure resulted in 70 FPIs from 14 countries.

Based on the index weightings as of February the 24th, 2023, from the NASDAQ website (NASDAQ, n.d.b), we chose the "Top 05" most valuable firms by latest market capitalization. Thus, the final sample comprises 75 firms (70 most valuable FPIs of 14 countries and 05 most valuable U.S. firms by market cap[4]) as follows:

Table 3 - Number of firms by industry

Industry Sector	Firms	%
Communication Services	14	18.7%
Materials	12	16.0%
Consumer Discretionary	11	14.7%
Information Technology	11	14.7%
Health Care	9	12.0%
Industrials	6	8.0%
Consumer Staples	4	5.3%
Energy	4	5.3%
Real Estate	3	4.0%
Utilities	1	1.3%

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[4] "Market Capitalization" variable from Capital IQ database: "Stock Price * Share Outstanding" in USD billion.

Total	**75**	**100%**

Prepared by the authors.

3.3 Data and observations

We use annual data from annual reports due to the inclusion of audited financial statements and therefore the GAAP earnings figure and management commentary, and other independent reports and written communications. These components collectively may provide a higher level of disclosure when compared to press releases.

We focus on annual data from fiscal years 2013-2022. Because we hand-collect all NGE data, we considered as many previous years as possible beginning on the last available year with annual reporting data (2022). Young (2014) affirms that "Reducing the set of firms on which to focus would enable researchers to collect more granular data capable of casting new light on reporting practices". Black, Christensen, Ciesielski and Whipple (2021), for example, explain that as their research design requires a time-series of hand-collected data they limited their collection by selecting a set of firms to keep the collection tractable. Choosing the last ten consecutive years reaches a recent panel data to analyze up-to-date information on non-GAAP earnings.

In relation to the types of reports under analysis, U.S. firms must fill annual reports in the 10-K and FPIs must fill annual reports in the Form 20-F. For each firm we analyzed a panel of 10 documents (01 annual report for year), ending with potentially 750 observations. Final sample is 138 and 120 firm-years observations.

As non-GAAP measures are voluntary metrics, one cannot know *ex ante* if firms disclose or not disclose non-GAAP earnings unless periodic reports are read. This is an important issue in this type of research, as the main research data are not commonly available in databases.

Even though Capital IQ supplies the "EBITDA as reported" variable, it does not provide detailed information for an in-depth analysis, such as adjustment types, prominence and many other qualitative information about non-GAAP disclosures. Therefore, data used in this essay are the result of hand-collected work.

The first step was to hand collect 750 annual reports. Using EDGAR Full Text Search we identified and saved all available links that contain annual reports (20-F or 10-K) for the final sample. We found that 123 links were not available because either (i) the firm did not exist until a specific year between 2013-2022; or (ii) the firm existed but was not listed on U.S. exchanges until a specific year between 2013-2022. In this sense we lost 123 firms-observations, remaining 627 potential observations (83.6% of all potential observations).

In order to identify annual reports that contain any type of non-GAAP earnings measures we hired a programmer who created a Python script[5] to search firms' annual reports for validated non-GAAP keywords[6], following Bhattacharya, Black and Christensen (2007) apud Wallace (2002), and Laurion (2020).

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[5] We hired a Python programmer to build a code that assess SEC's links to annual reports and search for keywords that identifies the presence of non-GAAP earnings inside them.

[6] Unlike Bhattacharya et al. (2007) we add EBITDA keywords as they also represent a type of non-GAAP earnings and exclude any keyword that identifies cash measures (ex: "free cash flow").

The search considers 20 keywords: "non-GAAP", "non-IFRS", "alternative performance measure", "ebitda", "adjusted ebitda", "underlying earnings", "adjusted earnings", "adjusted net income", "adjusted income", "adjusted net profit", "adjusted profit", "adjusted loss", "underlying earnings", "normalized earnings", "headline earnings", "recurring earnings", "GAAP adjusted", "pro forma earnings", "proforma earnings" and "pro-forma earnings".

In short, after accessing all 627 links the script returns, by link, the number of times each term is mentioned. If the term has not been mentioned, it returns the number zero, exactly like a "Ctrl + F" command on a PDF file. The results of this procedure can be seen below:

Table 4 - Python script results

Keyword description	Frequency
Non-GAAP	185
Non-IFRS	0
Alternative performance measure	22
EBITDA	286
Adjusted EBITDA	138
Underlying Ebitda	19
Adjusted earnings	54
Adjusted net income	87
Adjusted income	19
Adjusted net profit	24
Adjusted profit	17
Adjusted loss	0
Underlying earnings	24
Normalized earnings	12
Headline earnings	28
Recurring earnings	0
GAAP adjusted	0
Pro forma earnings	0
Proforma earnings	0
Pro-forma earnings	0

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One can see that the most mentioned keyword is "non-GAAP", which is a broader term for identifying non-GAAP reporters, and "EBITDA" is the most mentioned NGE keyword by firms in our sample, reaching 286 firms-observations (45.6%). We focus on "EBITDA" because it is a more precise indicator of non-GAAP earnings disclosures than solely "non-GAAP".

From those 286 *possible* NGE reporters, we found out by reading and analyzing each document that 148 annual reports only mention the keyword "EBITDA" throughout the annual report but *doesn't disclosed* the EBITDA measure. This happened when firms use EBITDA to monitor financial covenants or to indicate the use as a metric for their executive compensation plan. In such cases this information is not useful for this paper research objectives, as we needed more information on EBITDA disclosures.

In this sense we end up with 138 firm-year observations from 26 firms in 12 countries that included the reconciliation between Adjusted EBITDA and the GAAP earnings measure. Note that this number (138) matches the script output for the keyword

"adjusted EBITDA", which indicates that all firms that disclosed EBITDA also disclosed Adjusted EBITDA in the same reconciliation board, which is a good indicator about the scrip's and hand-collecting work quality.

Then, for the same 138 observations, we compared Form-20F non-GAAP disclosures with the local annual reports non-GAAP disclosures, which we collected from each investor's relations website. We lost 18 observations due to lack of data (annual reports) for 05 firms, ending up with 120 firm-year observations for the comparative analysis.

Other past studies also ended up with few observations because of the hand-collect aspect of the research, like Lougee and Marquardt (2004), for example, that reached a final sample of 249 firm-quarters observations. Similarly, Mey and Lamprecht (2020) and also Cormier and Magnan (2022), which investigated hand-collected EBITDA measures, reached samples of 185 and 224 firm-observations.

3.4 Research design

We examine (i) whether non-GAAP earnings disclosures of U.S. cross-listed are conditional on the reporting channel by comparting the NGE disclosures from the listing-country annual report with NGE disclosures from the home-countries annual report; and (ii) whether there is an association between a firm's home-country and qualitative variables that represent non-GAAP emphasis and magnitude.

3.4.1   Form-20-F and local annual reports data

We analyzed the disclosed reconciliation board between the NGE and the GAAP earnings and collected (i) the NGE number and (ii) types and magnitudes of the adjustments to conduct descriptives analysis and discuss disclosures characteristics[7].

3.4.2   Correspondence analysis data

We then conduct a multiple correspondence analysis (MCA) over main qualitative variables, as shown in Table 5. These variables were constructed based on data collection process. MCA procedure examines the association between firm's home-country and non-GAAP keyword frequency, non-GAAP earnings value and adjustments value.

Table 5 - Qualitative variables and categorical levels

Country (COUNTRY)	Non-GAAP keyword frequency (FREQ)	Non-GAAP value (NGEV)	Adjustments value (ADJV)
Argentina Australia Brazil	High	High	High

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[7] With regards to disclosures original currency, there are data presented in currencies other than U.S. dollar (USD). We converted the original values to USD using historical data from Yahoo Finance Website.

Canada			
China			
France			
Germany			
Japan			
Mexico			
Russia	Low	Low	Low
South Africa			
United Kingdom			

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Table 5 presents twelve categorical levels for COUNTRY and two categorical levels for FREQ, NGEV and ADJV ("high" or "low"). COUNTRY is defined as country of incorporation. FREQ is defined as the number of times "EBITDA" keyword is mentioned in Form-20F (as of information provided in Table 4). NGEV and ADJV is defined as "high" for observations with values above the median and "low" for observations with values below the median (NGE and ADJV absolute values are scaled by total revenues, as provided by Capital IQ).

We follow Fávero and Belfiore (2015) protocol to MCA procedure.

4. RESULTS

4.1 Descriptive evidence (Form-20-F)

In this section we present the main descriptive evidence of NGE disclosures for 26 U.S. cross-listed firms from twelve countries (138 firm-years observations).

60.9% of all observations are concentrated in the last four years (2019-2022). Cross-listed firms in our sample vary the disclosure decision choice among the years under analysis. 15.4% of them report the Adjusted EBITDA metric in eight of the ten years, which indicates a high degree of reporting persistence, but at the same time also 15.4% of them disclosed non-GAAP earnings in only two periods, indicating a less persistent reporting behavior. 19.2% of all firms disclosed the Adjusted EBITDA in four of the ten years.

Table 1 - NGE reporting by year

Adj. EBITDA reporting	N	%
FY2013	5	3.6%
FY2014	7	5.1%
FY2015	8	5.8%
FY2016	9	6.5%
FY2017	12	8.7%
FY2018	13	9.4%
FY2019	18	13.0%
FY2020	21	15.2%
FY2021	22	16.0%
FY2022	23	16.7%
Total	138	100.0%

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Table 7 - NGE reporting frequency

Adj. EBITDA reporting	%
Firms reporting in all ten years	7.7%
Firms reporting in nine of the ten years	7.7%
Firms reporting in eight of the ten years	15.4%
Firms reporting in seven of the ten years	3.8%
Firms reporting in six of the ten years	11.5%
Firms reporting in five of the ten years	3.8%
Firms reporting in four of the ten years	19.2%
Firms reporting in three of the ten years	11.5%
Firms reporting in two of the ten years	15.4%
Firms reporting only in one year	3.8%
Total	100.0%

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Table 8 shows the Adjusted EBITDA disclosure by country. South Africa holds almost 25% (24.6%) of firm-year observations. Brazil also holds a significant number of observations, concentrating 18.1%. France appears next with 10.1% of all observations.

Together they hold 52.9% of firm-year observations. Those countries are more representative in firms' number, suggesting that cross-listed firms from South Africa, Brazil and France report non-GAAP earnings frequently.

Table 8 - NGE reporting by country

Adj. EBITDA reporting	N firms	N firm-years (NGE reporters)	% firm-years (NGE reporters)
Argentina	2	9	6.5%
Australia	2	11	8.0%
Brazil	4	25	18.1%
Canada	1	6	4.3%
China	1	8	5.8%
France	2	14	10.1%
Germany	1	2	1.4%
Japan	1	1	0.7%
Mexico	1	8	5.8%
Russia	3	9	6.5%
South Africa	5	34	24.6%
United Kingdom	3	11	8.0%
Total	26	138	100.0%

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Table 9 summarizes the EBITDA disclosure by industry. The majority (53.6%) of firms are concentrated in the Materials (36.2%) and Consumer Discretionary (17.4%) sectors, followed by Communication Services (15.9%). Together they concentrate almost 69.6% of all firms.

Table 9 - NGE reporting by industry

Adj. EBITDA reporting	N firms	N firm-years (NGE reporters)	% firm-years (NGE reporters)

Materials	9	50	36.2%
Consumer Discretionary	5	24	17.4%
Communication Services	4	22	15.9%
Energy	3	9	6.5%
Consumer Staples	2	15	10.1%
Information Technology	2	14	10.9%
Industrials	1	4	3.0%
Total	26	138	100.0%

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In Table 10 is presented the EBITDA adjustments by category. *N* is the frequency of each category and % is the frequency percentage over 138 firm-years observations.

Table 10 - Adjustments types

Adjustments types	Value (abs)	*N*	%
Income taxes	195.575	138	100%
Interest/income expenses	115.495	138	100%
Depreciation and amortization	283.063	138	100%
Impairment	52.111	63	45.7%
Net equity investment	47.988	56	40.6%
Stock option/share-based compensation	33.438	54	39.1%
Other income/expense	9.596	53	38.4%
Acquisitions and disposals	10.106	48	34.8%
Restructuring charges	17.559	44	31.9%
Foreign exchange loss/gain	882	38	27.5%
Special items	28.341	33	23.9%
Fair value measurement	3.577	27	19.6%
Provisions	92	11	8.0%
Dividends	2.297	11	8.0%
Leasing	137	8	5.8%
Other[8]	38.317	55	39.9%
Total	838.575	138	

Prepared by the authors.

As can be seen, in addition to EBITDA's traditional adjustments, cross-listed firms frequently adjust earnings for (i) impairment effects (45.7%), (ii) net equity investment effects (40.6%), and (iii) stock option/share-based compensation expenses (39.1%).

Finally, Table 11 indicates U.S. cross-listed firms in the sample chose[9] to prepare their financial statements under IFRS or U.S. GAAP:

Table 11 - Accounting regime

Country	Accounting regime
Argentina	IFRS
Australia	IFRS

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[8] Correspond to some items for which the disclosure was too scattered or with insufficient transparency to classify them in one of the existing categories.

[9] Cross-listed firms are not obligated to file financial statements prepared under U.S. GAAP. They are permitted to prepare financial statements under their local GAAP, IFRS or U.S. GAAP, but reconciliation to US GAAP is required in the case of local GAAP preparation.

Brazil	IFRS
Canada	U.S. GAAP
China	U.S. GAAP
France	IFRS
Germany	IFRS
Japan	IFRS
Mexico	IFRS
Russia	U.S. GAAP/IFRS
South Africa	U.S. GAAP/IFRS
United Kingdom	IFRS

Prepared by the authors.

In our sample the majority (66.6%) of countries adopt IFRS, 16.67% adopt U.S. GAAP and 16.67% contain firms from both regimes (Russia and South Africa).

4.2 Descriptive evidence (Form-20-F versus local annual reports)

The comparative analysis between listing-country and home-countries annual reports was carried out upon 120 firm-year observations. South Africa and Brazil represents 48.3% of all observations, and Mexico and Japan are not included in the comparative analysis because their firms do not provide annual reports for the years under investigation.

We find the majority of firms (92.5%) disclosing NGE in Form 20-F (listing-country annual report) disclose the *same* NGE number and reconciliation board in the local annual report. Only 6.7% of them disclosed NGE *solely* on Form-20F and 0.8% have disclosed the NGE measure in both annual reports but the reconciliation board *exclusively* on Form-20F.

Table 12 - Results from comparative analysis

Description	N	%
Same NGE disclosures	111	92.5%
NGE disclosed solely on Form-20-F	8	6.7%
Reconciliation board solely on Form-20-F	1	0.8%
Total	120	100.0%

Prepared by the author.

Results suggest cross-listed firms in the USA still have a reporting choice with regards to NGE disclosures and that NGE disclosures can differ from the NGE disclosures filled with SEC.

4.3 Correspondence analysis results

As Fávero and Belfiore (2015) explain, to perform the MCA procedure it is recommended to run a diagnosis regarding the existence of association between variables. Only variables that show an association with at least one of the other variables must be included in the analysis (p. 251). This is tested by generating the observed absolute frequency tables for each pair of variables along with their respective X^2 tests.

We run the contingency tables, indicating the measures of association of each pair of variables. Based on X^2 tests results, at a significance level of 5%, there is a statistically significant association between all pair of qualitative variables except for FREQ x NGEV and FREQ x ADJV (the outputs are the same for both pair of variables). But as FREQ, NGEV and ADJV are statistically associated with COUNTRY, all variables are included in the analysis.

When the associations between variables are statistically significant it means they are not randomly associated and MCA procedure is adequate (Fávero & Belfiore, 2015). By testing the associations, and since they are not random, "we can use the analysis of adjusted standardized residuals to study the dependency relationship between each pair of categories." (p. 212). To identify the dependency relationships between the variables categories, we generate the results for adjusted residuals with positive values greater 1.96.

One can note countries most strongly associated with each variable category. They are, in descending order of each column:

Table 13 - Countries strongly associated with NGE qualitative data

| FREQ		NGEV		ADJV	
High	Low	High	Low	High	Low
France	Canada China Mexico UK	Brazil Australia	France Mexico	Canada China	France Mexico UK

Prepared by the authors.

France is strongly associated with high NGE emphasis and low non-GAAP earnings value and adjustments value. Mexico is strongly associated with low levels for all variables. Canada and China are strongly associated with low NGE emphasis and high adjustments value. UK is strongly associated with low levels for NGE emphasis and adjustments value. Finally, Brazil and Australia are strongly associated with high levels of NGE value.

After confirming the existence of a statistically significant association between variables and identifying the dependency relationships between their categories, we generate two graphics, the first refers to the perceptual map resulted from the multiple correspondence analysis.

Figure 1 - Perceptual map
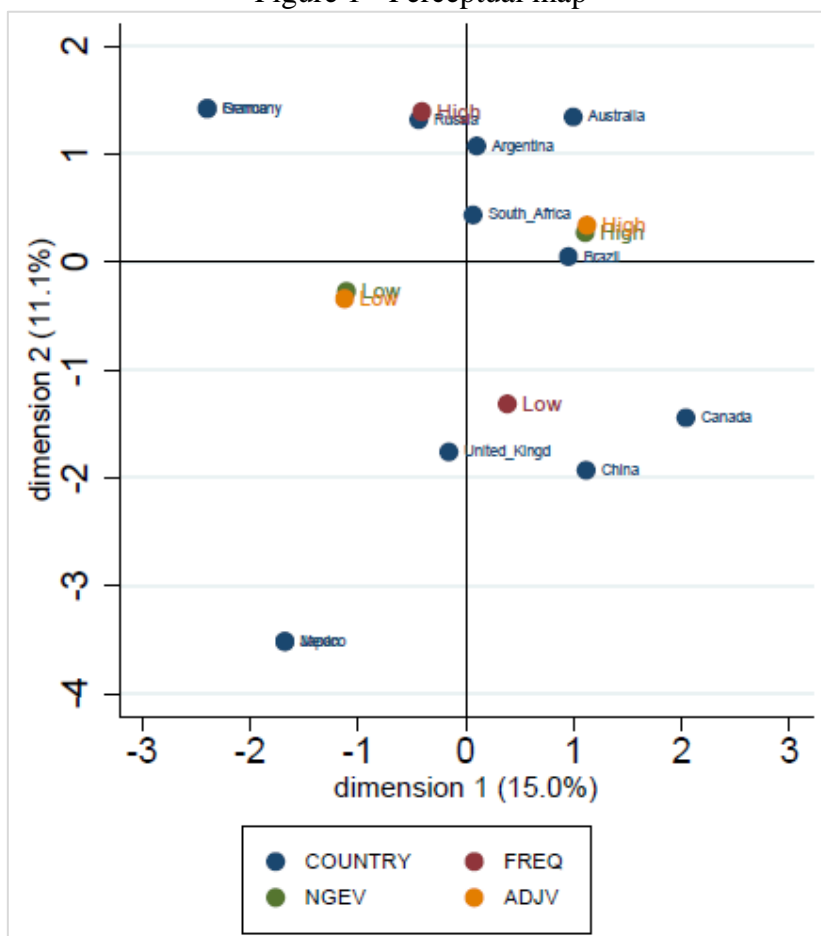
Prepared by the authors.

The perceptual map allows the visualization of the relative position of all variables in two dimensions (Fávero, Martins, & Lima, 2007). In Figure 1 the blue points indicate the home-country categories for the variable COUNTRY, and the other points (green, red and yellow) are the categories for the other qualitative variables (FREQ, NGEV, ADJV).

The closest countries are to the other categories ("high" or "low") more strongly they are associated with those non-GAAP characteristics. Moreover, the closest countries are on the map more similar they are perceived to be, and the further they are from the origin (where the x and axes equal to 0) the more discriminating (different) they are (Bock, n.d.).

As Bock (n.d.), explains, the dimensions percentages indicate how well the variance is explained by the map. In Figure 1 it can be seen that visualization displays 26% of the variance in the data, which means that countries left out of visualization may be highly differentiated on some dimension that is irrelevant for most of the countries.

It can be observed there are some associations between a firm's home-country and NGE emphasis and magnitude. Figure 1 suggests that countries like UK, Canada and China exhibit characteristics more strongly related to low levels of non-GAAP earnings emphasis. In contrast, Russia, Argentina and Australia are more strongly related to high levels of non-GAAP earnings emphasis. Brazil and South Africa are the countries more

16

strongly related to high levels of NGE and adjustments value, while UK, in the contrary, is the less strongly related to them.

Finally, note that Japan and Mexico, on the lower left side, and France and Germany, on the upper left side, present very similar associations with all three variables. Also, note they are the most apart countries from the origin, indicating they are the most different countries in the sample. In summary:

Table 14 - Relative position of countries regarding NGE qualitative data

FREQ		NGEV		ADJV	
High	**Low**	**High**	**Low**	**High**	**Low**
Russia Argentina Australia	Canada China UK	Brazil S. Africa	UK	Brazil S. Africa	UK

Prepared by the authors.

5. CONCLUSIONS AND FINAL REMARKS

In this paper we explore non-GAAP earnings disclosures in a cross-listing setting as these firms face unique reporting conditions. They also face different market forces from their home-countries and listing-country that may influence reporting practices.

We examine whether NGE disclosures of U.S. cross-listed firms are conditional on the reporting channel (i.e., listing-country or local annual reports). Our exploratory premise, based on institutional theory, is that *U.S. institutional factors influence the reporting incentives of cross-listed firms to converge with non-GAAP disclosures practices in both annual reports (Form 20-F and local annual report).*

In line with that prediction, the majority (92.5%) of cross-listed firms provided the same NGE disclosure in both annual reports. We find 7.5% firm-observations presented some level of divergence between the listing-country and home-country annual reports. These few results still indicates (i) there are firms providing NGE measures solely on Form 20-F; and that (iii) there are firms providing the reconciliation between the non-GAAP earnings and the GAAP earnings solely on Form 20-F.

Results suggest, consistently with the premise that NGE disclosure characteristics of U.S cross-listed firms *do not* differ conditional on the periodic reports reporting channel, that home-countries institutional factors of U.S. cross-listed firms *do not* influence, in a significant way, their reporting incentives to disclose non-GAAP earnings in a different way in their local annual reports. This evidence is explained by the institutional theory and is consistent with Shi et al. (2012) results.

Further, we investigate the association between NGE emphasis, NGE magnitude and cross-listed firms' home-countries. Results from MCA procedures suggest cross-listed firms from France emphasizes more non-GAAP earnings, while cross-listed firms from Canada, China, Mexico and United Kingdom do not emphasizes non-GAAP earnings in their SEC annual reports. With regards to NGE magnitude, firms from Brazil and Australia disclose higher NGE numbers, while France and Mexico firms disclose lower numbers for NGE value. Adjustments values are higher for Canadian and Chinese firms, and lower for France, Mexico and UK firms.

Evidence from the perceptual map indicates, in relative terms, that (i) firms from Russia, Argentina and Australia are highly associated with NGE emphasis, while Canada, China and UK are less associated with NGE emphasis; (ii) firms from Brazil and South Africa are highly associated with NGE magnitude, while firms from UK are less associated with NGE magnitude. Countries' reporting incentives, driven by institutional factors, shape those associations (Healy & Palepu, 2001; Holthausen, 2009).

Isidro and Marques (2015), for example, points out firms from countries with stronger institutional and economic factors present more rigorous regulation and scrutiny over financial reporting, which pressures firms to provide voluntary disclosures in a strategic way. Regarding such an argument, our results are mixed.

Out results suggest, for example, that French firms, which are from a developed economy and are under non-GAAP guidance from European Securities and Markets Authority (ESMA), emphasizes NGE in their annual report. Yet, results also reveal that firms from Canada and UK, which are economically developed countries and present non-GAAP regulation or guidance, do not emphasize NGE in their annual reports.

As U.S. cross-listed firms applying IFRS are no longer required (since 2008) to reconcile financial statements with U.S. GAAP, financial reporting differences may impact NGE values. Past research show that another institutional factor that shapes firm-level disclosures is the adopted accounting regime. Solsma and Wilder (2011; 2015) postulate that the accounting regime is associated with non-GAAP disclosures behavior. They conclude that U.S. cross-listed firms applying IFRS report lower NGE adjustments when compared to U.S. firms. Still, when comparing cross-listed firms applying IFRS with U.S. GAAP, results suggest NGE magnitude are similar. Thus, they argue the accounting regime do not help to explain NGE magnitude for U.S. cross-listed firms.

Considering Russia and South Africa, IFRS is adopted by 83.3% of countries in the sample. Our results suggest that U.S. adopters are more associated with high adjustments magnitude, while IFRS adopters are associated with low adjustments magnitude. Yet, some results are mixed: for IFRS adopters there are countries highly associated with NGE value and countries lower associated with NGE value.

Finally, we provide evidence that U.S. cross-listed firms frequently adjust (i) impairment, net equity investment and stock option/share-based compensation expenses, which are also the categories presenting the higher adjustments value. Special items and restructuring charges also present high adjustment magnitude for our sample.

Black et al. (2018) results indicate that U.S. firm frequently adjust non-recurring expenses like restructuring charges, tax resolutions and acquisition related charges. Clinch et al. (2022) compare that result with their sample descriptive evidence on an international sample and show evidence is much aligned, except for stock-based compensation expense. However, Isidro and Marques (2015) affirm stock-based compensation is also frequently adjusted by firms.

Clinch et al. (2022) results point that impairment is the most frequently adjusted and with the higher average value for firms in their sample. With regards to the types and magnitudes of NGE adjustments from U.S. cross-listed firms, we do not find a specific pattern in disclosures to differentiate them from past international descriptive evidence.

Our results have some limitations due to sample size concerns and procedures. This paper provides internal validity evidence but lacks external validity attributes. Future research could extend Solsma and Wilder (2011; 2015) study to provide evidence on the

relation of accounting regime and NGE disclosures behavior to shine a light on the matter, and investigate, based on other approaches and methods, like Sang et al. (2022), whether and to what extent institutional factors and other reporting incentives affects U.S. cross-listed firms voluntary disclosures.

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