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## Article

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# The influence of IFRS and institutional quality on economic growth: empirical evidence in the GCC countries using panel ARDL analysis

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## ABSTRACT

We empirically investigated the effect of international financial reporting standards (IFRS) and institutional quality (IQ) on economic growth in the GCC region. We used panel data collected over 25 years (1998–2022) from six GCC countries—Bahrain, the United Arab Emirates, Saudi Arabia, Qatar, Oman, and Kuwait. A panel cointegration test was used to investigate the relationships among the variables. This study confirms a long-run 15% decline in GDP following the adoption of IFRS in GCC nations. The short-term impact is positive, with a rise of 13% in the GDP. Conversely, institutional quality negatively affected the GDP in the long and short run. We used an index for institutional quality based on six variables. It is recommended that policymakers take advantage of the immediate advantages of adopting IFRS while implementing long-term plans to reduce the projected decline in GDP. The economic repercussions of IFRS adoption and institutional quality should be carefully considered while at the same time emphasizing the advantages of open trade and low inflation in encouraging long-term growth.

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## 1. Introduction

The Gulf Cooperation Council (GCC) is a geopolitical alliance comprising Bahrain, the United Arab Emirates, Saudi Arabia, Qatar, Oman, and Kuwait. It serves as a platform for regional cooperation in politics and economics. GCC countries have their challenges but do share common issues, such as a still-growing private sector, restricted R&D investment, a poorly skilled workforce, and overreliance on the oil/petroleum industry (Mishrif, 2018). Economic growth is significantly valued in GCC countries, considering its role in stabilizing the region, reducing poverty, and enhancing citizens' lives, income, and wealth (AlKhars et al., 2022). Achieving these ambitions is critical if the challenge is to devise meaningful policies for them. The GCC countries have broadly adopted International Financial Reporting Standards (IFRS), as these standards are the most modern system for ensuring probity and transparency in cross-border transactions, honest business dealing, accountability, and efficiency in transactions (Ebaid, 2022; Tawiah & Boolaky, 2020).

Institutional quality is defined as the governance quality in a country, and its primary indicators are political stability, control of and consistent punishment of corruption, government effectiveness, accountability, upholding property rights, shareholder protection, and high-quality and enforced legislation/regulations (Camargo, 2021; Digdownseiso & Sugiyanto, 2021; El-Helaly et al., 2020a, 2020b). These two elements - IFRS and institutional quality - strongly influence economic activity in GCC countries. IFRS significantly guides economic growth in GCC countries by making organizations operate appropriately internationally (Al Mazroui et al., 2023; Almujaed et al., 2017). Meanwhile, the quality of institutions helps economic growth by enhancing a region's competitiveness when organizations and their agencies,

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units, and staff are effective in their functions (Al-Naser & Hamdan, 2021). For these reasons, it is imperative to investigate the effect of IFRS and institutional quality on the economy of GCC countries, as economic growth is supposed to alleviate the critical challenges encountered in the region.

The research on the influence of IFRS and institutional quality on economic growth in GCC nations lacks comprehensive studies, resulting in a deficit in knowledge in both the long and short term. Prior studies on this subject have a restricted focus, mainly examining FDI. However, there is still a lack of comprehensive investigation of the impact of IFRS and institutional quality on economic growth. Other studies have evaluated the effect of IFRS adoption and institutional quality and their influence on inward FDI in different countries (Gasimov et al., 2023; Sawyer, 2011). Studies on GCC countries are specific to either IFRS or institutional quality but not both. For instance, Mameche and Masood (2021) addressed the economic impact of IFRS implementation but omitted institutional quality. Siriopoulos et al. (2021) explored this topic by testing the adoption of IFRS and institutional governance but limited their work to only one economic variable, FDI. A recent study conducted by Almaqtari et al. (2021) appears to be the only work that covered this topic by concentrating on GCC and investigating the relationship between IFRS and institutional quality while considering the economy as a whole (Almaqtari et al., 2021).

It is evident that research gaps exist regarding the limited availability of studies on the relationship between IFRS adoption, institutional quality, and economic growth in the GCC region. This study sought to address this discrepancy. In addition, existing researches tend to be narrow in scope because they do not investigate broader economic concepts or how IFRS and institutional quality shape them in the short and long run. While these concepts influence economic growth from the perspectives of monetary policy, comparative advantage, market failure, fiscal policy, and international trade, recent studies have predominantly concentrated on FDI, implying that their comprehensiveness is limited. Neither IFRS nor institutional quality exists in isolation, so examining their influence together would only be fair.

Therefore, the main objective of this paper is to evaluate the economic influence of IFRS and institutional quality in the GCC region. IFRS is closely linked to institutional quality in growing the economy, and the two should be examined in the long and short run. IFRS alone cannot lead to sustained growth in GCC, which applies to institutional quality. Besides guaranteeing that financial statements are accurate and comparable worldwide, the region must have reputable and effective institutions to accomplish desired economic growth (Siriopoulos et al., 2021). Institutional quality complements the comparability and transparency elements accomplished through IFRS to accomplish an inclusive and sustainable economy (Owusu et al., 2022). Therefore, this study examines the association between IFRS and institutional quality in boosting the economy in the long and short run.

The current study contributes to the existing literature in several ways. Firstly, this research fills the gap in the literature concerning the relationship between IFRS and institutional quality in supporting economic growth. This study considers the institutional quality index formulated using principal component analysis. The implications include the need for GCC countries to continue integrating IFRS into their economic policies and linking these standards with institutional quality to ensure economic growth. The findings will be significant for investors, policymakers, and researchers, given the need to focus on how economic growth occurs. While most have concentrated on FDI as the only significant economic feature of IFRS and institutional quality, this view is restricted because these components can help achieve growth. Furthermore, this study is of utmost importance due to its significant impact on economic growth in the GCC. It has the potential to address various challenges, such as expanding the private sector, limited R&D investment, a workforce lacking adequate skills or qualifications, and excessive reliance on the oil and petroleum industry.

Secondly, the study examines how IFRS, institutional quality, trade openness, and inflation influence economic growth. It will establish a foundation for future academics to investigate more economic aspects concerning IFRS and institutional quality impacts, such as unemployment rate, interest rate, consumer confidence index, and FDI. Thirdly, this study contributes to better policy, encouraging relevant officials to make decisions based on the correct data emanating from the convergence of IFRS and institutional quality.

The rest of this paper is structured as follows. The next section reviews the relevant literature and proposes the hypotheses. Section 3 explains the empirical methodology and data. Section 4 presents our estimation results. Section 5 presents a discussion, and finally, Section 6 concludes with a summary of

the key findings, policy suggestions, economic implications, academic/research implications, limitations, and avenues for future research.

## 2. Literature review

Several studies have examined GCC IFRS and institutional quality-related issues (Alsuhaibani, 2012; Cieřlik & Hamza, 2022; Mameche & Masood, 2021; Siriopoulos et al., 2021). Ali (2023) investigated the influence of institutional quality and foreign direct investment (FDI) on economic growth from an environmental quality perspective. His findings confirmed the positive effect of institutional quality on the economy but the negative effect on the environment due to the creation of pollution. Mameche and Masood (2021) conducted a study to analyze the macroeconomic data of the GCC region about the impact of IFRS adoption on FDI. Their results revealed that countries may raise FDI inflows by 3% in the short run, but a 10.4% decrease occurs in the long run. In their work, Cieřlik and Hamza (2022) sought to gain insights into IFRS adoption and institutional quality regarding FDI. Their findings confirmed the positive relationship of IFRS adoption and institutional quality with foreign investment. Moreover, a few other studies reported the significance of institutional quality in attracting foreign investment and suggested that GCC governments should ensure that the quality of their institutions is not questioned (Chidlow et al., 2021; Cieřlik & Hamza, 2023; Dimitrova et al., 2020). Furthermore, Alsuhaibani (2012) examines the anticipated influence of IFRS adoption in Saudi Arabia and finds that it influences company profits, revenues, regulatory bodies, and the overall business milieu.

Various GCC countries have implemented IFRS, which are now international regulations devised by the International Accounting Standards Board (IASB), intending to get investors to make sound investment decisions, document various ways of measuring business and financial performance in multiple countries, lower capital costs for firms, and reduce risks for investors. Moreover, IFRS can reduce the costs of generating financial information/data, offer more incentives for international investment, and permit resources to be deployed more efficiently internationally (Lourenço & Branco, 2015).

IFRS presents a set of accounting standards established in 2001 through IASB, replacing the International Accounting Standards (IAS) from 1973 to 2001 (Mameche & Masood, 2021). GCC countries adopted IFRS at various times, with Bahrain in 2001, the UAE in 2015, and Saudi Arabia in 2017, while Oman, Kuwait, and Qatar readily transitioned from IAS to IFRS. Oman has had IAS since 1986, Kuwait since 1991, and Qatar since 1999 (Al-Enzy et al., 2023). The IFRS adoption in GCC countries has promoted more asymmetrical information, which has enhanced FDI positively so that the information is trusted as being more reliable through comparability (Alnodel, 2016).

Institutional quality has many implications for the economic development of the GCC region. A study by Hussen (2023) asserted that institutional quality determines the investment milieu's conduciveness from the trade barriers viewpoint. Economic growth is subject to the quality of institutions based on how they uphold and enforce the rule of law and punish corruption (Boęa, 2019). In addition, countries with well-established institutions that safeguard property rights and promote and oversee free market business practices have witnessed economic expansion. (Hussen, 2023). For instance, sub-Saharan African nations that have enhanced their institutional quality recorded 5% GDP growth and GDP per capita growth of 2% annually (Hussen, 2023). The GCC could grow similar GDP and GDP per capita by incorporating institutional quality with IFRS. According to Nnadi and Soobaroyen (2015), institutional quality factors are more critical than IFRS standards in attracting FDI and driving other aspects of economic growth. For instance, several studies addressed the positive impact of IFRS on the economy, including the work of Oppong and Aga (2019), Özcın (2016), Li and Shroff (2010), and Zaidi and Huerta (2014). Such influence can be seen through enhancing specific industrial sectors and using advanced technology in which foreign investors spend their money, improving the foreign exchange reserves (Borensztein et al., 1998; Graham & Krugman, 1991). Nevertheless, this relationship has rarely been investigated in the GCC countries, which is what this study intends to accomplish.

In government effectiveness and political stability, institutional quality determines an economy's ability to attract FDI (Cieřlik & Hamza, 2022). The implication for the GCC is that it would still experience economic stagnation or little change even after IFRS adoption if the institutional quality is ignored (Dempere & Pauceanu, 2022). Institutional quality provides underlying governance structures that shape

other laws and regulations for the marketplace. Consequently, countries adopting IFRS with high institutional quality enjoy higher economic growth (Owusu et al., 2022). Simultaneously, institutional quality motivates domestic businesses to react to new foreign companies, leading to more competition, which is assumed to be beneficial (Hayat, 2019). Specifically, high-quality institutions provide incentives to create innovative investment opportunities, enabling firms to meet the challenges of increased competition, thereby generating growth (Khalilov & Yi, 2021). Institutional quality reflects the government's indirect macro-control of economic growth and environmental protection. Institutional quality is associated with strategies domestic firms devise to use cultural and legal rules and precedents to their advantage (Ali, 2023). For example, scholars found either direct or indirect positive influence between institutional quality and economic growth Acemoglu et al. (2008) Valeriani and Peluso (2011) and Iqbal and Daly (2014). Therefore, this study investigates the direct linkage in the GCC countries, which has been rarely investigated.

### 3. Hypotheses development

#### 3.1. IFRS and economic growth

The critical role of IFRS, which has led many nations to adopt such standards, is linked to its main feature of enhancing disclosure quality, which in turn attracts FDI in stock markets, and the economy is expected to flourish when foreign funds flow into a country (Özcan, 2016, Oppong & Aga, 2019). The influence of FDI in GCC countries is evident in several ways, including advanced technology and enhancing specific industrial sectors in which foreign investors spend their money, which increases foreign exchange reserves (Borensztein et al., 1998; Graham & Krugman, 1991). Moreover, it is significant to note that previous studies did not differentiate between the timing of IFRS and how it affects economic outlook, yet most of the evidence is for the short term (about ten years after IFRS adoption). With this argument, we make the following hypothesis for the short-run scenario:

**Hypothesis 1.** *IFRS have a positive association with economic growth in GCC countries in the short run.*

#### 3.2. Institutional quality and economic growth

Although the positive influence of IFRS has been established in the discussion above and proven by the literature elsewhere in the world, such as Li and Shroff (2010), Zaidi and Huerta (2014) and Özcan (2016), it is still not clear how such an influence would function in GCC countries since other studies proved the lack of such a relationship; for instance, according to Daske (2006), the implementation of IFRS in Germany does not have a direct influence on economic growth. For this reason, it is vital to examine the role of IFRS adoption quality, yet quality should be addressed at an institutional level in the economies being investigated here. The literature has defined institutional quality in terms of governance procedures and policies, including accountability, government effectiveness, shareholder protection, corruption control, political stability, regulatory/legislative quality, and protection of property rights (Camargo, 2021; Digdowiseiso & Sugiyanto, 2021). Institutional quality's influence on economic growth can proceed in both ways. For instance, the findings reported by Nawaz et al. (2014) indicated that the effect of institutional quality differs across Asian countries, depending on their state of economic development. Acemoglu et al. (2008) find that good institutional quality enhances a country's usage of modern technology, which generally leads to economic growth. Other studies support this positive impact, such as Valeriani and Peluso (2011) and Iqbal and Daly (2014).

Conversely, several studies support the idea that institutional quality indicators can be harmful to economic growth (e.g., Kandil (2009); Aidt et al. (2008). These studies argued that some institutional quality indicators, for example, corruption, significantly, when they increase and are hard to detect, hinder economic growth despite the virtues of shareholder protection and political stability, which can positively bolster economic growth because it assures DFI providers. Some institutional quality indicators can appear attractive or repellent to FDI providers, such as the rule of law, accountability, generous tax concessions, cuts in tariffs or excise duties, and relaxation of social- and environment-related penalties, as



noted by Schneider and Frey (1985), Kimura and Todo (2010) and Mottaleb and Kalirajan (2010). They argue that developing countries that provide friendly business environments for international firms are more likely to attract FDI. Based on this argument, we test the following hypotheses:

**Hypothesis 2.** *Institutional quality has a positive association with economic growth in GCC countries in the short run.*

It is worth mentioning that the above hypotheses were devised based on the short-run assumption, which empirical research supports the most because IFRS adoption improves the integrity and trustworthiness of financial statements and reduces information asymmetry in the short run, helping create better macroeconomic conditions (Gordon et al., 2012, Lungu et al., 2017, Kao, 2014, Turki et al., 2017). Nevertheless, the outcome of this situation is contingent upon the duration and pace at which countries embrace IFRS, as the timing and swiftness of adoption might provide varying outcomes. Elmghaamez et al. (2020) carried out a study that analyzed the impact of early adoption of ISAs on the financial sector. They used panel data from 110 countries spanning the years 1995 to 2014. Their research indicated that early adoption of ISA had a detrimental impact on several financial market indicators, except for a few indicators only observed in listed corporations that filed their financial statements using IFRS and were audited simultaneously by ISAs.

Similarly, El-Helaly et al. (2020a, 2020b) examined the impact of national corruption on the global implementation of IFRS. They analyzed data from 89 countries outside the European Union, spanning 2003 to 2014. Their research demonstrated a strong inverse (direct) correlation between the level of corruption and the speed and extent of IFRS adoption. Conversely, Elmghaamez et al. (2023) analyzed the economic outcomes of implementing ISA based on the diffusion of innovation theory. They utilized data from 160 nations spanning 20 years. The findings confirmed the positive impact of early ISA adoption on three economic indicators of the adopting countries: economic growth, FDI inflows, and exchange rate. In contrast, the late ISA adoption positively influenced exports and interest rates, but it also harmed imports.

In their seminal work, Mameche and Masood (2021) noted a distinction between a short- and a long-run adoption of IFRS effect on FDI in the GCC bloc. There is a negative influence on FDI in the long run. Hwang et al. (2018) explain that the influence of IFRS adoption can differ over time if economic and social circumstances vary. Specifically, the impact of profits management and value relevance, observed in the initial phase following the implementation of IFRS, exhibited variations over time in countries with distinct legal frameworks and external investor protection mechanisms. Jamaani and Alidarous (2022) observed that IFRS does not favor the long-run performance of firms in the initial public offering (IPO) market. Therefore, this study retests the above hypothesis with a negative influence in the long run.

**Hypothesis 3.** *IFRS have a negative association with economic growth in GCC countries in the long run.*

**Hypothesis 4.** *Institutional quality has a negative (causal) association with economic growth in GCC countries in the long run.*

## 4. Research design

This part provides an explanation design for this research, including the specific methods and sources used for data collection. It also outlines the definitions and measures of both dependent and independent variables. In addition, it addresses the model framework utilized in this research and the estimating technique adopted to accomplish its objectives.

### 4.1. Data sources

To examine the influence of institutional quality and IFRS on economic development, this study uses panel data collected over 25 years (1998–2022) from six GCC countries: Bahrain, the United Arab Emirates, Saudi Arabia, Qatar, Oman, and Kuwait. This dataset comprised 150 observations. The nature of the data is quantitative (numerical in nature). Furthermore, annual statistics for all variables were sourced from credible secondary or already published data, specifically the World Bank's World Development Indicators

**Table 1.** Variable descriptions.

Variable Name	Symbol	Definition	Unit	Type	Source
Gross Domestic Product	GDP	The total value contributed to the economy comprises the production of goods and services minus the value required for production/manufacture.	GDP (current US\$)	Dependent	World Bank (2023)
International Financial Reporting Standard.	IFRS	International Accounting Standard	Binary	Independent	IFRS and IAS plus
Institutional Quality Index	INSTQ	The institutional quality index encompasses the rule of law, voice and accountability, government effectiveness, political stability, absence of violence, control of corruption, and regulatory quality	Index	Independent	World Governance Indicator (2023)
Trade Openness	TO	Trade refers to the combined value of goods and services exported and imported, measured as a percentage of gross domestic product (GDP).	Trade (% of GDP)	Control	World Bank (2023)
Inflation	INF	Inflation, gauged by the consumer price index (CPI), indicates the annual percentage shift in the average cost.	Inflation, consumer prices (annual %)	Control	International Monetary Fund (2023)

**Table 2.** IFRS Adoption.

GCC countries	Adoption year
Saudi Arabia	2017
Bahrain	2010
Oman	2001
Kuwait	2001
Qatar	2002
United Arab Emirates	2015

Source: International financial reporting standard website ([www.ifrs.org](http://www.ifrs.org)).

(2023), the International Monetary Fund (2023), and World Governance Indicators (2023). Since the data is sourced from public platforms and is already published, no additional permission is required to use it for research purposes. Table 1 shows a brief description of the variables of the study and their source.

The dependent variable is represented by the natural logarithm of each country's GDP in current US dollars, which serves as a proxy for economic growth. This decision is aligned with other existing studies, particularly those of Razzaq et al. (2023), Owusu et al. (2022), and Oppong and Aga (2019). The independent variable under examination is the IFRS adoption. A dummy variable measures IFRS adoption, with a value of one for a year when the nation adopted IFRS and zero otherwise. A few vital studies by Beneish et al. (2015), Gordon et al. (2012), and Bassemir and Novotny-Farkas (2018) used IFRS in a binary form. It is essential to note that the IFRS adoption differed for each GCC country (Table 2).

The data on institutional quality is obtained from the Worldwide Governance Indicators (WGI) created by Kaufmann et al. (2011). Six indices were employed to measure overall institutional quality: corruption, political stability, rule of law, lack of violence, government efficacy, voice and accountability, and regulatory quality (Agbloyor et al., 2016; Kose et al., 2011). These indices are measured on a scale between 2.5 and −2.5, where higher values signify superior institutional quality (e.g., a country with a score of 2.5 exhibits the best institutional quality, while −2.5 indicates the worst). However, Principal Component Analysis (PCA) is used to derive a comprehensive index for this variable, which does not range from −2.5 to 2.5 scale. Using PCA, a single weighted index was constructed for the six specific institutional quality indicators (INSTQ). The positive INSTQ refers to institutional solid quality, while negative numbers indicate weak institutional quality, which impacts economic growth accordingly. The justification for the above argument is that high-quality institutions will effectively distribute resources to provide economic value for all economic participants. This involves ensuring that



institutions take the lead in consistently designing, monitoring, and improving policies and strategies to enhance local industries' competitiveness sustainably. This approach mitigates the subjectivity bias that may arise when a particular variable is considered a proxy for a specific aspect. For example, when assessing institutional quality, some studies have used either political stability or control of corruption as measures, and excluding one while including the other may introduce subjectivity bias by overlooking the multidimensional aspects of institutional quality (Arvin et al., 2021; Ghalia et al., 2019; Kim et al., 2018).

The study also included control variables that were identified as predictors of economic development, consistent with the research by Agbloyor et al. (2016), Oppong and Aga (2019), Owusu et al. (2022), and Zaman et al. (2021). Previous studies have highlighted savings, trade openness, financial market development, population increase, and inflation as critical growth factors. In this study, trade openness and inflation are the control variables for economic growth. Trade openness is calculated by adding the total value of imports and exports and scaled by GDP. Conversely, inflation is assessed using the Consumer Price Index (CPI) and represents the annual percentage change in the average cost of goods and services.

## 4.2. Model specification

To investigate the effect of IFRS and institutional quality on the economy, we write the following basic formulation in functional form in line with existing studies (Oppong & Aga, 2019; Owusu et al., 2022).

$$GDP = f(IFRS, INSTQ, TO, INF) \quad (1)$$

Where GDP is the gross domestic product, IFRS denotes the adoption of international financial reporting standards, INSTQ represents the institutional quality index, TO is trade openness, and INF stands for inflation. This baseline equation (1) considers the relationship between institutional quality and IFRS adoption regarding economic growth. The institutional quality index is an indicator of institutional quality, and the variable descriptions and data sources are summarized in Table 1. Control variables are directly or indirectly related to economic growth and constitute the core elements of overall economic development. Therefore, equation (1) is modified and logged to help interpret the coefficients.

$$GDP_{it} = \beta_0 + \beta_1 IFRS_{it} + \beta_2 INSTQ_{it} + \beta_3 TO_{it} + \beta_4 INF_{it} + \varepsilon_{it} \quad (2)$$

This study covers the period from 1998 to 2022 for the six GCC countries. The subscripts *i* and *t* point out the country and time correspondingly;  $\varepsilon$  denotes the stochastic error term, and  $\beta_0$  denotes the intercepts.

To test the proposed hypotheses, we conducted preliminary tests. Initially, this involves examining Cross-Sectional Dependence in panel data using the cross-sectional dependence (CD) test presented by Pesaran et al. (2004). Subsequently, we executed a homogeneity test, as suggested by Pesaran and Yamagata (2008), to assess the homogeneity among the selected variables. Both tests are crucial for selecting appropriate unit root tests. When the null hypothesis is refuted, the cross-sectional dependence test, which employs Pesaran's CD, offers insight into the existence of cross-sectional dependence among the variables across all sections and countries. The homogeneity results were based on the adjusted delta tilde. If the null hypothesis is rejected, the homogeneity condition of the panel is rejected; alternatively, panel heterogeneity is accepted.

In addition, unit root tests are selected depending on their outcomes to confirm that the variables are stationary and prevent deceptive regressions. If there is cross-sectional dependence, it is more suitable to employ second-generation unit root tests, such as the CIPS and CADF, as they can address this issue. Several first-generation unit root tests are conducted if cross-sectional dependence does not exist.

According to Danish and Wang (2018), the traditional regression models of FMOLS and DOLS do not consider the cross-sectional assumption. Hence, the pooled mean group (PMG) estimate approach is employed in this empirical study to determine whether the estimated model dictates how institutional quality and IFRS adoption shape economic development in GCC nations. The hypothesis of the research involves the validation of long-run and short-run relationships between the variables.

Hence, using a panel ARDL model or pooled mean group (PMG) estimation offers the benefit of identifying dynamic short-run and long-run associations. The PMG estimator can estimate short-run relationships, considering the heterogeneity of the coefficients, adjustment for long-run equilibrium (pace of adjustment), and error variance. Coefficients in the long term are required to be consistent across nations. This method is suitable for implementation because it is more effective and consistent with long-term relationships. Pesaran et al. (1999) contended that the PMG estimate approach, calculated using the maximum likelihood method, provides a practical benefit by outlining both the short- and long-run coefficients and calculating the long-run equilibrium association value. As a component of this approach, consistency is maintained across groups for intercepts, error variance, and short-run and long-run coefficients. This estimating method allows for diverse and heterogeneous short-term coefficients among different nations or groups while demanding that the long-term coefficients be the same across all countries or groups. It also considers the variations in the rate at which different cross-sections adjust to the long-term equilibrium coefficient. The panel ARDL estimation methodology emerges as a robust method for concurrently investigating long- and short-run cointegration among the selected variables, displaying flexibility in dealing with the unit root features inherent in the variables studied. The PMG model is specified within the panel ARDL framework as follows.

$$\begin{aligned} \Delta GDP_{it} = & \alpha_0 + \theta_1 GDP_{it-1} + \theta_2 IFRS_{it-1} + \theta_3 INSTQ_{it-1} + \theta_4 TO_{it-1} + \theta_5 INF_{it-1} + \sum_{i=1}^n \omega_1 \Delta GDP_{it-i} + \sum_{i=0}^n \omega_2 \Delta IFRS_{it-i} + \sum_{i=0}^n \omega_3 \Delta INSTQ_{it-i} \\ & + \sum_{i=0}^n \omega_4 \Delta TO_{it-i} + \sum_{i=0}^n \omega_5 \Delta INF_{it-i} + \phi ECT_{it-1} + \varepsilon_{it} \end{aligned} \quad (3)$$

Where: GDP serves as the dependent variable, quantifying the monetary value of economic activities in an economy; and  $\Delta GDP$  represents the growth of GDP, signifying the economic growth for country 'i' at time 't'. ECT denotes the error correction term, whereas the  $\theta$  and  $\omega$  coefficients correspondingly represent the short - and long-run slope coefficient. The symbol  $\Delta$  represents the first difference operator,  $\varepsilon$  represents the stochastic term, and  $\phi$  signifies the error-correction term coefficient. To confirm cointegration, it is necessary for the lagged coefficient of the error correction term ( $\phi$ ) to be both significant and negative.

## 5. Empirical results

### 5.1. Descriptive test

The estimation begins with a descriptive statistics analysis, as reported in Table 3. The descriptive statistics presented the normality, standard deviation, and dispersion of the data for the investigation. Referring to the study variables, trade openness data demonstrated the highest volatility, with 31.32. The curve of the data is given by kurtosis statistics, which suggests that all the variables except inflation have a standard curve, while inflation data has a leptokurtic curve because its kurtosis value is above 3. The data derived from GDP, IFRS, and INSTQ are negatively skewed, while TO and INF are positively skewed, also known as a right-skewed distribution.

### 5.2. Correlation matrix and multicollinearity

The results in Table 4 suggest a strong correlation between the INSTQ and TO, with a positive coefficient of 0.403 and a  $p$ -value (0.000). However, TO is negatively correlated with the GDP variable, with a coefficient of  $-0.201$  and a  $p$ -value (0.013), which is significant at the 5% level. There is also a significant positive correlation between IFRS and INSTQ and between INF and GDP. Moreover, none of the variables exhibited a correlation coefficient of  $> 80\%$ , suggesting no multicollinearity among the variables in this study. Furthermore, in Table 5, the variance inflation factor (VIF) test shows no multicollinearity among the variables. The mean (VIF) is 1.11, below 5; therefore, no multicollinearity exists.

**Table 3.** Summary of descriptive statistics.

Variables	GDP	IFRS	INSTQ	TO	INF
Mean	25.292	0.593	6.671	106.8	2.414
Median	25.402	1.000	0.035	96.381	2.093
Std. Deviation	1.225	0.492	1.900	31.327	3.151
Kurtosis	2.230	1.144	2.231	2.818	6.546
Skewness	−0.124	−0.380	−0.134	0.800	1.524
Observations	150	150	150	150	150

Note: \*, \*\*, and \*\*\* represent statistical significance at the 1%, 5%, and 10% levels, correspondingly. The values included in parenthesis represent the *p*-values.

**Table 4.** Correlation matrix.

	GDP	IFRS	INSTQ	TO	INF
GDP	1.000				
IFRS	0.033 (0.682)	1.000			
INSTQ	−0.133 (0.104)	0.154*** (0.058)	1.000		
TO	−0.201** (0.013)	0.062 (0.447)	0.403* (0.000)	1.000	
INF	0.149*** (0.067)	0.060 (0.463)	0.040 (0.622)	0.019 (0.810)	1.000

Note: \*, \*\*, and \*\*\* represent statistical significance at the 1%, 5%, and 10% levels, correspondingly. The values included in parenthesis represent the *p*-values.

**Table 5.** VIF test for multicollinearity effects.

Variable	VIF	Collinearity statistics
IFRS	1.22	0.819
INSTQ	1.19	0.837
TO	1.03	0.973
INF	1.00	0.995
Mean VIF	1.11	

### 5.3. Cross-Sectional dependence and homogeneity test

Choosing suitable unit roots is necessary to assess the stationarity of the data. This action is determined by whether there is cross-sectional dependence. Hence, Pesaran's (2Pesaran'sest) was employed to assess the presence of cross-sectional dependence. The findings shown in Table 6 indicate that the null hypothesis, which assumes no cross-sectional dependence, is disproven. The CD test statistic was 18.473, with a significant *p*-value of 1%.

Furthermore, Pesaran and Yamagata's (Yamagata's was used to check the homogeneity of the variables. The findings in the latter part of Table 6 point out that the panel is heterogeneous. The null hypothesis of the Pesaran and Yamagata tests suggests that the panel is homogenous. However, the results of the test show that the delta tilde (large sample) and adjusted delta tilde (small sample) are not homogenous, subsequently rejecting the null hypothesis. Therefore, this study used heterogeneous panel estimations.

### 5.4. Panel unit roots test results

The existence of cross-sectional dependence in the series prohibits the application of a first-generation unit root test. Due to insufficient consideration for cross-sectional dependence, the first-generation unit root test yields unreliable and imprecise results. This study utilizes the second-generation unit root test of the CIPS and CADF tests. Both tests can handle situations where cross-sectional dependence is present. The results of the CIPS and CADF tests, as shown in Table 7, demonstrate that all variables, except for INF, support the null hypothesis that the series has a unit root at that level. However, all the variables refute the null hypothesis when considering the first difference. Therefore, considering the first

**Table 6.** The cross-sectional dependence and homogeneity tests.

Pesaran's CD test			
No. of Observation	Cross-Sections	Statistics	p-value
150	6	18.473*	0.000
Pesaran -Yamagata homogeneity test			
		Statistics	p-value
$\Delta\sim$		8.114*	0.000
$\Delta\sim$ - adjusted		9.308*	0.000

Note: \*, \*\*, and \*\*\* indicate statistical significance at the %1, 5%, and 10% levels, respectively.

**Table 7.** The second-generation panel unit root tests.

	At level	At first difference
	Constant	Constant
CIPS test		
GDP	-1.537	-3.685*
IFRS	-1.752	-4.930*
INSTQ	-1.244	-4.995*
TO	-2.132	-4.902*
INF	-2.749*	-4.651*
CADF test		
GDP	-2.023	-2.813*
IFRS	-1.526	-3.196*
INSTQ	-0.870	-3.689*
TO	-2.013	-3.682*
INF	-2.433**	-3.249*

Note: \*, \*\*, and \*\*\* correspondingly indicate statistical significance at the 1%, 5%, and 10% levels.

**Table 8.** Westerlund cointegration test results.

	Statistic	p-value
Variance Ratio	1.919**	0.027

Note: \*, \*\*, and \*\*\* correspondingly indicate statistical significance at the 1%, 5%, and 10% levels.

difference, the series does not exhibit a unit root. Thus, considering the first difference, we may deduce that the series exhibits stationarity  $I(1)$ .

### 5.5. Panel cointegration test result

The Westerlund (2007) cointegration test considers the panel's cross-sectional dependence and heterogeneity. The Westerlund test for cointegration establishes whether the variables have a long-term relationship. The null hypothesis of the Westerlund exam is that there is no cointegration in the panel, whereas the alternative hypothesis is that some/all panels are cointegrated. The findings in Table 8 imply that the variables are cointegrated, rejecting the null hypothesis with a  $p$ -value (0.027).

### 5.6. Pooled mean group estimation

After confirming the existence of long-run cointegration among the variables, the next step was determining the coefficients of the relationships between the variables. As discussed in the methodology, this study used the PMG estimate approach to analyze the long- and short-run coefficients. The findings shown in Table 9 indicate that, in the long run, IFRS and INSTQ both have a negative influence, with a statistical significance of 1%. The outcomes suggest that with IFRS adoption, the GDP diminishes by 15% in GCC countries, whereas with the increase of INSTQ by 1%, GDP drops by 13% in the long run. Conversely, the control variables TO and INF have a positive long-run coefficient with a statistical significance of 1%. With an increase of 1% in TO and INF, the GDP tends to grow by 0.6% and 6%, respectively, in the long run.

The findings in Table 9 show that adopting IFRS is positively and significantly associated with the GDP in GCC regions, with a statistical % significance level of 10%. This supports the short-term estimate. The

**Table 9.** Panel ARDL (PMG) estimation results.

Variables	Coefficients	<i>p</i> value
Long-run estimates		
IFRS	−0.156*	0.000
INSTQ	−0.137*	0.000
TO	0.006*	0.000
INF	0.067*	0.000
Short-run estimates		
ect <sub>t-1</sub>	−0.305**	0.011
ΔIFRS	0.137***	0.074
ΔINSTQ	0.001	0.959
ΔTO	0.007*	0.084
ΔINF	0.011	0.526

Note: \*, \*\*, and \*\*\* correspondingly indicate statistical significance at the 1%, 5%, and 10% levels. Values in parentheses are standard errors.

findings suggest that, with IFRS adoption, GDP increases by 13% in the short run. However, the INSTQ, in the short run, is not significantly associated with GDP. The control variables TO are positively and significantly related to GDP at 1%, with an increase of 0.7%. However, INF is not significantly associated with GDP in the short run. This conclusion suggests that the coefficient of the error correction term (−0.30) is statistically significant at the 5% level and is less than one with a negative sign. According to Pesaran et al. (1999), this suggests that the long-run equilibrium of our model is valid. The ECT coefficient is −0.305, suggesting that GDP will converge to its equilibrium level over time at a rate of adjustment of 30% per year. This implies that reaching a new equilibrium state will take around 3.3 years.

### 5.7. Generalized methods of moment (GMM) robustness test

The potential endogeneity of regressors is a primary econometric concern when utilizing panel data of nations across time to evaluate economic growth. There are a few potential empirical issues that must be resolved in order to estimate regression accurately. The lagged dependent variable (L1.GDP) on the right side is one of the current problems. The lagged dependent variable correlates with the fixed effects in the cross-country fixed-effect estimation, which results in dynamic panel bias (Roodman, 2009). When the error process is autocorrelated, a potential connection between the error component and the lagged dependent variable (L1.GDP) raises another empirical concern. The endogeneity of the regressors (INF, TO), aside from the lagged dependent variable (L1.GDP), presents a third econometric problem. Assume that a few of the regressors on the right may be endogenous. The estimated coefficients will thus be biased due to the regressors' correlation with the error term. In our fixed-effect dynamic panel estimation, we employ Arellano & Bond (1991) one-step difference Generalized Method of Moments (GMM) estimator to solve this endogeneity issue. A crucial empirical feature is the Arellano-Bond difference GMM estimator's ability to instrument a first-differenced endogenous regressor in the modified regression equation with its lagged levels.

The findings in Table 10 show that the lagged GDP has a positive influence of 0.78 on the current GDP. The IFRS has a positive and significant influence on economic growth. With the increase of 1% in IFRS, the GDP increased by 0.38. The findings are consistent with the PMG estimation of IFRS in the short run. The study findings reveal that INSTQ negatively impacts GDP, and the findings align with the PMG estimation test results. The findings also reveal that the first-order (AR1) and second-order (AR2) serial autocorrelations are rejected. Hence, no autocorrelation is present. The result does not reject the Hansen test null hypothesis of valid instruments being used. Therefore, the Hansen test suggests the correct model specification and the instruments' overall validity. The two-step difference GMM was used to check the robustness of the results originating from PMG estimation. The estimation results of the two-step difference GMM suggest that the coefficient results of PMG are robust, as the alternative estimation techniques also reveal the same results.

### 5.8 Decisions on research hypothesis

This section draws conclusions and decisions on the research hypothesis that align with research questions and objectives. The decisions are based on the findings presented in the above section. The following Table 11 reviews the decisions on the research hypothesis.

**Table 10.** Two-step difference GMM estimation results.

Variables	Coefficients	<i>p</i> value
L1.GDP	0.783*	0.000
IFRS	0.384**	0.024
INSTQ	−0.034**	0.017
TO	0.001	0.952
INF	0.027*	0.000
Arellano-Bond test for AR(1) in first differences: $z = -1.85$ $Pr > z = 0.065$		
Arellano-Bond test for AR(2) in first differences: $z = -1.22$ $Pr > z = 0.222$		
Hansen test of overid. restrictions: $\chi^2(3) = 3.84$ $Prob > \chi^2 = 0.279$		

**Table 11.** Decisions on Research Hypothesis.

	Null Hypothesis	Decision
H <sub>1</sub>	IFRS have a positive association with economic growth in GCC countries in the short run.	Accepted
H <sub>2</sub>	Institutional quality has a positive association with economic growth in GCC countries in the short run.	Rejected
H <sub>3</sub>	IFRS have a negative association with economic growth in GCC countries in the long run.	Accepted
H <sub>4</sub>	Institutional quality negatively affects economic growth in GCC countries in the long run.	Accepted

## 6. Discussion

The pooled mean group estimation findings confirm a 15% decrease in GDP in the long run following the IFRS adoption throughout the GCC. The current finding corroborates the findings of Cuijpers and Buijink (2005), Jamaani and Alidarous (2022), and Daske (2006). On the other hand, our result contradicts the results of Gordon et al. (2012), Kao (2014), Lungu et al. (2017), and Turki et al. (2017). Therefore, the current findings call for identifying and evaluating the driving factors that lead to crises. Some studies suggest possible factors, such as transitional challenges, increased transaction/business costs, more complex reporting requirements, and unstable shifts in investor confidence due to changes in financial reporting practices. For instance, Van Hulle (2003) maintains that the transition from old to new standards results in many types of accounting because firms have alternatives for reporting, for instance, according to HGB, US-GAAP, and IAS/IFRS. This practice has weakened the ability to compare financial reporting between corporations and has increased the amount of information available on specific individual firms. The diversity and speed of the ‘accounting revolution’ and the need for available accounting information for similar periods might have influenced the apparent uncertainty between the investors throughout the transition period. The empirical results of Cuijpers and Buijink (2005) corroborate the detrimental effects of IFRS implementation on transitional severe issues. In general, IFRS and high-quality institutions contribute to economic progress, but there may be certain unintended consequences to think about, particularly in the far future. Particularly for SMEs, adopting and maintaining IFRS may be complicated and expensive. Spending on compliance should be better invested in profitable areas if the Resource-Based Theory is to be believed. In the long term, economic development may be impeded by high compliance costs, which lower profitability and deter new company endeavors.

Moreover, Daske (2006) finds that the transition to IFRS results in a higher cost of equity capital, and the possible reason may be the difficulties and inaccuracy of estimated costs. Difficulties in estimating the cost of capital arise when companies apply methods with different accounting standards (Easton & Monahan, 2005). The potential increase in business costs may lead to a reduced GDP. Policymakers should consider the trade-offs between international financial reporting requirements and their possible impacts on GDP. How to lessen adverse conditions should be investigated, including implementing gradual changes or providing specific assistance to companies that need to adjust to new regulations.

The finding that a 1% increase in INSTQ corresponds to a 13% decline in GDP points to a nuanced link between economic success and institutional quality. The current result is parallel with the results of Kandil (2009), Aidt et al. (2008), and Cieřlik & Hamza (2022) and inconsistent with the findings of Al-Naser and Hamdan (2021), Hussen (2023), Ali (2023), Valeriani and Peluso (2011), Iqbal and Daly (2014), and Acemoglu et al. (2008). It is essential to conduct further research to determine the precise elements of



institutional quality that drive this detrimental effect. It may be essential to consider governance policies and procedures, the rule of law, and the efficacy of regulations (Chen et al., 2014). Furthermore, the difficulties governments in the host nation may encounter are exacerbated by political unrest and regional disputes (Nnadi & Soobaroyen, 2015). The temptation of multinational corporations to carry out corrupt activities, such as bribery, to secure local permissions or licenses in the host country can be encouraged by poor institutional quality, which ultimately creates uncertainty and hinders long-term economic planning (Cleślik & Hamza, 2022). Targeted institutional reforms that address the deficiencies in governance and regulatory quality should be the focus of policymakers. Strengthening legal frameworks, stamping out corruption, and improving transparency could be important tactics to offset the problems associated with rising institutional quality (Tawlah & Gyapong, 2021). Stringent regulatory frameworks are often associated with high-quality institutions. According to Regulatory Capture Theory, even well-meaning laws have the potential to become too onerous, leading to a reduction in competition and innovation. The long-term development of the economy is threatened by overregulation, which causes inefficiencies, higher costs, and less economic dynamism.

The positive impact of open trade on GDP growth is consistent with trade theory. Fatima et al. (2020) state that open trade policies contribute to economic growth by accumulating human capital and fostering efficiency, competition, and specialization. In contrast, Keho and Wang (2017) contended that a strong association between trade openness and capital formation promotes economic growth. Similarly, trade openness encourages innovation and technological progress, making long-term economic growth possible (Ibrahim & Ajide, 2021). To increase open trade, policymakers can improve infrastructure, reduce tariffs and other trade barriers, and improve cross-border transactions. The augmentation of global trade links has the potential to make a favorable contribution to viable and sustained economic progress.

The finding that a 6% gain in GDP is linked to a 1% increase in inflation (INF) defies conventional wisdom but has been observed in specific contexts. The finding aligns with Thanh (2015) and Barro (2013), who discuss the concept of moderate inflation targeting and suggest that mild inflation can stimulate spending and investment, contributing to economic growth. Thanh (2015) posits that countries can improve their economic growth by reducing inflation above or near the estimated thresholds. Hence. As discussed by Barro (2013), a moderate level of inflation can indicate a healthy and growing economy, supporting the idea that a 1% increase in inflation could lead to a 6% growth in GDP. Effective monetary policy requires a thorough comprehension of the underlying dynamics, including the cycles and types of consumer spending and investment patterns. Monetary policy may require meticulous calibration by policymakers to preserve the delicate equilibrium between fostering economic expansion and averting hyperinflation. An examination of strategies for controlling inflation to a moderate degree is warranted.

## 7. Summary and conclusion

This study examines the influence of IFRS, INSTQ, TO, and INF on GCC countries' GDP. These findings provide valuable insight into the complex dynamics of these nations. The long-run analysis shows a significant inverse relationship between GDP and implementing IFRS and INSTQ, suggesting possible economic difficulties and unfavorable consequences. These findings highlight the importance of carefully considering how the quality of institutions and the adoption of international accounting standards affect GCC countries' economic performance. Over the long run, there are notable positive connections between GDP and the control variables, Trade Openness (TO) and inflation (INF). A 1% increase in Trade Openness (TO) is linked to GDP growth of 0.6%, but a 1% increase in INF results in a substantial growth of 6%. These results are consistent with well-established economic theories that emphasize the positive effects of moderate inflation and trade openness on economic growth.

Considering the short-run dynamics, the positive correlation between IFRS adoption and GDP is significant, which points to a short-run GDP gain of 13%. The lack of a statistically significant correlation between the INSTQ and GDP in the short run suggests that the influence of institutional quality on economic performance may take longer to materialize or that a more thorough investigation is necessary. Examining the control variables in the short run, TO exhibits a positive and significant association with GDP at the 1% level, with a 0.7% increase. By contrast, INF is insignificantly associated with GDP in the short run, strongly suggesting that its impact may take longer or is less pronounced

in the short-run context. Error correction term (ECT) analysis is critical for determining a model's long-run equilibrium. The negative and significant ECT coefficient ( $-0.305$ ) indicates a realistic long-run equilibrium, with GDP reverting to its equilibrium level at the 30% annual adjustment rate. This equates to 3.3 years for the economy to change and stabilize, emphasizing the durability of long-run equilibrium relationships.

### **7.1. Economic implications**

The negative association between GDP and IFRS adoption and INSTQ implies possible economic challenges and adverse outcomes in the future. This suggests that adopting IFRS and improving institutional quality, intended to increase economic performance, may have had a better impact than expected. Policymakers must thoroughly evaluate the expenses and advantages of implementing global accounting standards and investing in enhancing institutional quality to guarantee their beneficial contribution to stable economic growth.

The positive connection between GDP and TO underscores the significance of implementing liberal trade policies for fostering economic growth in GCC countries. An increase of 1% in trade openness is correlated with a long-term rise of 0.6% in GDP, suggesting that initiatives to encourage international commerce can substantially benefit economic performance. Policymakers must prioritize measures that make trade more accessible, such as lowering tariffs, enhancing trade infrastructure, and encouraging industries that focus on exporting. This will allow them to take full advantage of the potential advantages of trade openness regarding GDP growth.

On the other hand, the strong positive association between GDP and INF highlights the importance of low inflation in promoting economic expansion in GCC countries. An incremental rise of 1% in inflation is correlated with a significant 6% surge in GDP over an extended period, suggesting that moderate inflation might stimulate economic activity and investment. Policymakers should strive to sustain a moderate level of inflation to bolster economic expansion while concurrently adopting steps to alleviate the adverse consequences of excessive inflation, such as price volatility and diminished buying capacity.

### **7.2. Academic/research implications**

This study offers valuable insights into the intricate dynamics of GCC countries' economies, specifically regarding the influence of international accounting standards, institutional quality, trade openness, and inflation on GDP. These insights can be valuable for researchers and scholars in economics and finance, helping them better understand the factors that affect economic performance in GCC nations. They can also use these insights to identify potential areas for further research and exploration.

It is vital to consider long-term and short-term dynamics when examining the connection between economic variables, as emphasized in the study. The different long- and short-term effects of IFRS adoption and INSTQ on GDP show that these factors may change over time, calling for different ways of analyzing them. Researchers need to use reliable econometric techniques, such as ECT analysis, to understand the changes in economic relationships over time effectively. The current study results have significant consequences for formulating economic policies in GCC countries. Policymakers must thoroughly evaluate the impact of implementing international accounting standards, enhancing institutional quality, fostering trade openness, and controlling inflation on economic development and stability. Policymakers can enhance the efficacy of policies that foster inclusive economic development in GCC countries by integrating empirical facts and insights from academic research.

In conclusion, the findings of this study contribute to a better comprehension of the economic dynamics of GCC countries, and their policy implications are significant. It is strongly recommended to carefully consider the economic repercussions of IFRS adoption and institutional quality, while emphasizing the positive influence of open trade and low inflation in encouraging long-term economic growth. The insights can help guide strategic policy decisions and encourage a balanced approach to regional economic reform.

### 7.3. Limitations and avenues for future research

The current study used panel cointegration tests to show the association between variables. However, the study's cross-sectional design raises questions regarding endogeneity and causation. Unaccounted variables or the possibility of causality in the other direction may impact the observed connections between the adoption of IFRS, the quality of institutions, and economic growth. Future studies could utilize advanced methodologies such as instrumental variable approaches, dynamic panel data models, or structural equation modeling to more effectively unravel the causal linkages between adopting IFRS, institutional quality, and economic growth in the GCC region.

On the other hand, the current findings are limited to the region of GCC and might not be readily transferable to other countries or regions with distinct economic, regulatory, and institutional circumstances. Hence, it is advisable to be cautious when extrapolating the findings to other countries in the GCC. In order to improve the applicability of the results, future studies could perform comparative assessments across various regions or countries with different economic, regulatory, and institutional frameworks.

### Ethical approval and consent to participate

Not applicable.

### Consent for publication

Not applicable.

### Author's contributions

**AW** contributed to the study conception, **MJGW** research methodology, and data analysis. **AA** and **IA** wrote the first draft of the manuscript and revised it. **NA** and **AW** performed data collection and interpretation of the data. **AW** and **AA** read and approved the final manuscript. All the authors agreed to be accountable for all aspects of the work.

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The authors whose names are listed in this paper certify that they have NO affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

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## Data availability statement

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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