# Analyzing the Correlation Between University Rankings and the Economic Performance of Countries

## *Üniversite Sıralamaları ile Ülkelerin Ekonomik Performansı Arasındaki İlişkinin İncelenmesi*

**Aslı Günay**

[1] Social Sciences University of Ankara, Faculty of Political Science, Department of Economics, Ankara, Turkey

**Orcid**: A. Günay (0000-0001-5085-6374)

**Abstract**: The main objective of this study is to examine the correlation between university rankings and the economic performance of countries, if university rankings are used as a proxy for the quality of higher education. The findings indicate that there is a correlation between the GDP (or the size of the country's economy) and the number of universities in the top 500, but there is no correlation between the employment rate and the number of universities in the top 500 by the year of 2019. Hence, the results imply that GDP value rather than the employment rate of countries has an impact on university rankings (or the quality of higher education). Since it is thought that countries with higher or better levels of education, both in terms of quantity and quality, will also have stronger economic growth, the findings of this study could help policymakers make decisions about higher education and the economy.

**Keywords**: economy; employment rate; gross domestic product; quality; university rankings

**Özet**: Bu çalışma, üniversite sıralamaları ile ülkelerin ekonomik performansı arasındaki ilişkiyi incelemektedir. Üniversite sıralamaları ülkelerin yükseköğretim sisteminin kalitesini gösteren bir vekil olarak kullanılarak analizler yapılmıştır. Bulgular, 2019 yılında ülkelerin GSYİH'sı (veya ülke ekonomisinin büyüklüğü) ile THE Dünya Üniversite Sıralamasına göre ilk 500'de yer alan üniversite sayısı arasında bir korelasyon olduğunu, ancak ülkelerin istihdam oranı ile ilk 500'de yer alan üniversite sayısı arasında bir bağlantı olmadığını göstermektedir. Hem nicel hem de nitel olarak daha yüksek ya da iyi eğitim düzeyine sahip ülkelerin daha güçlü ekonomik büyümeye sahip olacağı varsayımına göre, bu çalışmanın bulgularının ülkelerin yükseköğretim ve ekonomi politika yapıcıları için faydalı olacağı öngörülmektedir.

**Anahtar kelimeler**: ekonomi; gayri safi yurt içi hâsıla; istihdam oranı; kalite; üniversite sıralamaları

## 1. Introduction

Today, university rankings are a common phenomenon in international higher education areas across the globe since a variety of universities seek to attain the prestigious title of "world-class universities" (Altbach, 2004; Wilbers&Brankovic, 2021). According to Salmi (2009), "world-class universities" must possess the following characteristics: a high concentration of talent; sufficient resources to provide a rich learning and research environment; and favorable and flexible governance features that allow universities to manage resources with less bureaucracy. From this point of view, university rankings are made to fully show which universities are considered "world-class universities" in the international higher education area.

Rankings are regarded as quantified, zero-sum comparisons of performances that are repeatedly provided by a third party and represented using a hierarchical table (Werron&Ringel, 2017). Indeed, university rankings are lists of higher education institutions rated in descending order according to a common set of factors. They are typically presented in the form of a league table, with universities listed from best to worst (Usher&Savino, 2007). Rankings take into account a number of performance indicators, including teaching, research, internationalization, and research income, in addition to the

university as a whole. Briefly, Delgado-Marquez, Hurtado-Torres,&Bondar (2011) indicated that all evaluations and rankings of higher education institutions are based on the assumption that the university as a whole has a "brand effect".

It should be emphasized that university rankings have become useful tools for university administration and policymakers during the last decade, even though there is a lot of debate about how valid and reliable they are. Even with these disagreements, university rankings are an integral part of today's competitive higher education area, and they are also more visible and important than before.

Human capital theory basically contends that investing in education boosts workers' productivity, which raises their lifetime incomes (Becker, 1964). Stevens&Weale (2003) claimed that since education benefits people economically, it is reasonable to assume that countries with higher levels of education will also have stronger economic growth. Numerous studies have shown a correlation between increased educational attainment level and economic growth in the literature (Hanushek, 1995; Gemmel, 1996; Krueger & Lindahl, 2001). According to Barro (1991), "poor countries tend to overtake affluent countries if the poor countries have high human capital per person (in relation to their level of per capita gross domestic product (GDP))." While Barro (1999), Hanushek&Kimko (2000), and Hanushek&Woessmann (2007) used standardized test scores as a proxy for the quality of education, they found a strong positive relationship between the quality of education and economic growth.

On the other hand, Clifford (2014) examined the connection between university rankings and GDP per capita and GDP growth, which concluded that the ratio of world-class universities to the total population, or world-class universities per capita, closely correlates with GDP per capita. Moreover, AREPPIM (2014) found a positive correlation between the university rankings and the GDP of countries. Hence, if university rankings are used as a proxy for judging the quality of a country's higher education system, then it's not completely wrong to say that the quality of higher education has something to do with how well a country's economy does.

According to Bloom, Canning,&Chan (2006), from the perspective of employment, it will be less likely for recent graduates to look for meaningful employment in the absence of good macroeconomic management. In addition, Nogales, Córdova&Urquidi (2020) demonstrated that employability was significantly impacted by university reputation. Besides, Hastings, Neilson,&Zimmerman (2015) found that degrees from highly selective universities and programs pay off better in the labor market than

other degrees in Chile. In this context, the OECD (2021a) reported that 58% of 25-34 year-old adults who have not completed upper secondary education are employed, compared to 78% among those with upper secondary or post-secondary non-higher education graduates and 85% among those with higher education graduates on average across OECD countries. Similarly, having a higher education degree carries a considerable earnings advantage of about 57% among OECD countries. In other words, as the level of education increases, the probability of being employed also increases. But it is clear that the probability of employment will be higher for those who graduate from universities that provide higher quality education.

Since being ranked can raise a university's profile and recognition, world university rankings can play a more important role in the drawing of international students than before. Today, universities in world university rankings are perceived as having better quality, and so attract more students. For example, the number or share of international students is particularly one of the performance indicators when calculating universities' ranking scores (Times Higher Education [THE] World University Rankings, 2022; QS World University Rankings, 2022). In this context, the most recent data from the Association of International Educators (NAFSA) shows that international students attending American universities supported 306,308 jobs and contributed $28.4 billion to the United States (US) economy during the 2020–2021 academic year (NAFSA, 2022). In other words, the number of international students has a positive impact on a country's economy in terms of GDP and employment. Additionally, 118 US universities were ranked among the top 500 universities in the world by 2021, according to the THE World University Rankings (THE, 2021). Therefore, it might be said that there is a correlation between the number of international students, university rankings, and economic performance for any country.

In sum, there is widespread consensus that higher education degrees encourage economic growth and employment opportunities for any country. However, there is definitely a gap in the academic literature regarding how the quality of higher education influences a country's economic performance. From this point of view, the main objective of this research is to look at the correlation between university rankings and countries' economic performance if university rankings are used as a proxy for the quality of higher education. Although there are some studies that investigate the correlation between the quality of education and the economic performance of countries, there are few studies that examine the correlation between university rankings and economic performance. So, considering the lack of studies in this area, the purpose of this paper is to try to fill that gap in the

literature. In this context, the organization of the paper is as follows: The next section explains the data used in this study. The following ones give the methodology and findings of this study, respectively. Finally, the study is concluded.

## 2. Data

Millions of people have died as a result of the COVID-19 pandemic, a new strain identified in China in December 2019 that has changed the world forever. For instance, the OECD (2021b) reports that a severe downturn in global economic activity resulted in a 3.5% drop in global output in 2020 (Açıkgöz&Günay, 2021). By using data from 2019, this study ignored how bad the COVID-19 pandemic would be for global economies to present more realiable results.

THE World University Rankings were used in this study to list the top 500 universities by 2019. This is because THE World University Rankings is the only global university performance table that properly ranks research-intensive universities in all of their core missions: teaching, research, knowledge transfer, and international outlook. THE World University Rankings 2019 was the largest international league table to date, with more than 1,250 universities included. In order to present the most thorough and fair comparisons, 13 precisely calibrated performance indicators—trusted by academics, university leaders, businesses, and governments—were included in this ranking. The five performance indicator categories are broken down into the following weights, which are used to determine the final ranking scores: teaching (30%); research (30%); citations (30%); international outlook (7.5%); and industry income (2.5%) (THE, 2019a).

The World Bank's (WB) data of each country's GDP (in current US dollars) and employment rate were used for economic performance data. GDP at purchasers' prices is the total of all resident producers' gross value added, plus any applicable product taxes, minus any subsidies not reflected in the value of the goods. Besides, employment is defined as people of working age who, for a brief period of time, engage in any activity to produce goods or provide services for pay or profit, whether they were at work during the reference period or not at work due to temporary absence from a job, or due to working-time arrangements. So, the employment rate refers to the ratio of the number of people working in a country to the total number of people in that country (WB, 2022).

## 3. Methodology

For this study's bibliometric analysis, which is a common way to find out what is going on in an area, the top 500 universities from THE World University Rankings 2019

were looked at. This is simply described as a statistical review of published journal articles, books, or other scientific works (Kaya&Erbay, 2020; Dereli et al., 2011; Günay, 2021). Then, a correlation analysis was carried out using the EViews10 software package program.

## 4. Findings

According to THE World University Rankings 2019, 47 countries had universities in the top 500 in 2019 (THE, 2019b). With 123 universities, the US held the top spot in the world, while the United Kingdom (UK) and Germany followed closely behind with 58 and 44 universities, respectively. However, 12 countries had only one university in the top 500, including Qatar, Greece, Hungary, and others (Figure 1).

While the US had the world's biggest economy in 2019, with a GDP of $21.37 trillion, China was the world's second biggest economy, with a GDP of $14.27 trillion. Japan and Germany came in third and fourth place, with a GDP of $5.12 and $3.88 trillion, respectively. 31 countries, including Turkiye, New Zealand, Finland, the Netherlands, and others, had a GDP of less than $1.00 trillion (Figure 2).

In contrast to the number of universities and GDP value, Taiwan (96.33%), Qatar (88.22%), and the United Arab Emirates (77.42%) were the top three countries according to the employment rate value in 2019. As the US and Germany had an employment rate of 59.92% and 59.98%, respectively, China had a 66.01% employment rate. Only nine countries, including Spain, Turkiye, India, and others, had an employment rate of less than 50% (Figure 3).

A correlation analysis for the GDP, employment rate, and the number of universities in the top 500 data for the year of 2019 was conducted, and the results are presented in Table 1. The findings indicate that the number of universities in the top 500 and GDP values of countries are positively correlated with each other with a coefficient of 0.78. However, the number of universities in the top 500 and the employment rate are not correlated with each other. These findings are consistent with the situation presented by the above figures. But, surprisingly, these findings don't support the idea that a university's reputation has a big effect on a graduate's chances of getting a job, as Córdova&Urquidi (2020) suggest.

According to Figure 4, there is a correlation between the GDP (or the size of the country's economy) and the number of universities in the top 500. In other words, the more a country's universities are listed among the top 500 globally, the greater the GDP or visa versa. The linear regression (correlation) line shows that, even though some countries are ahead (like the US, UK, and Germany) or behind the trend (like China, Japan, and India), there
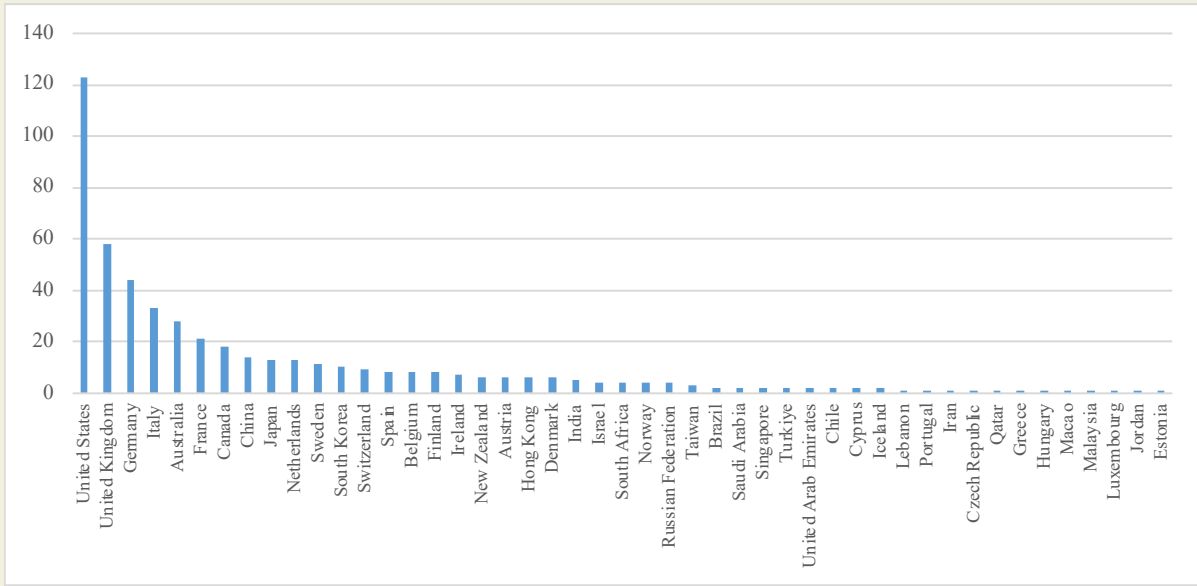
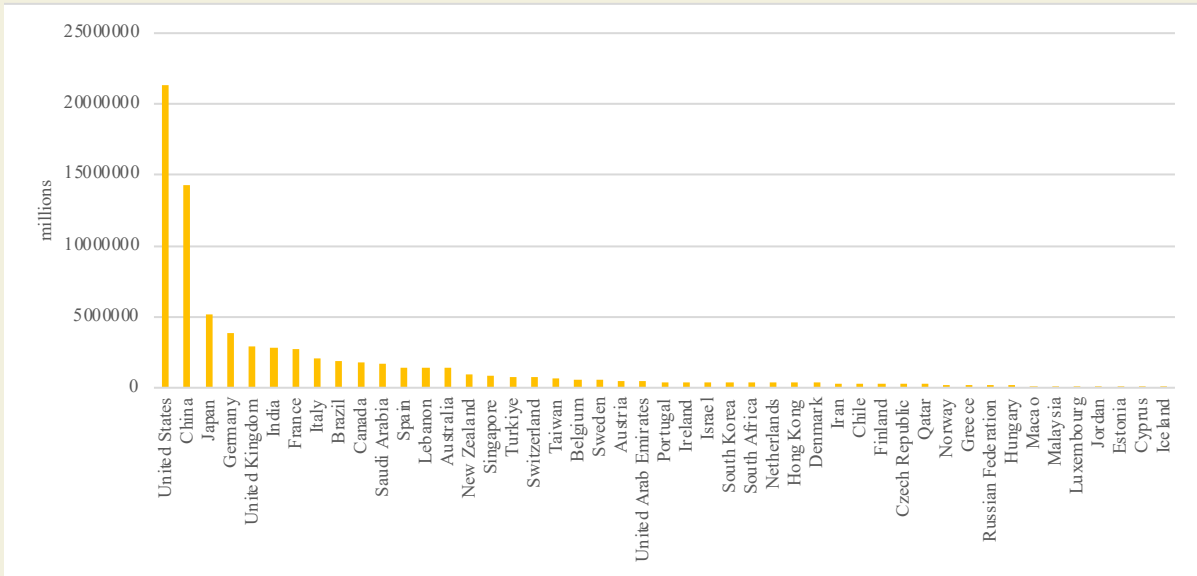**Figure 1.** Number of universities in the top 500 by country
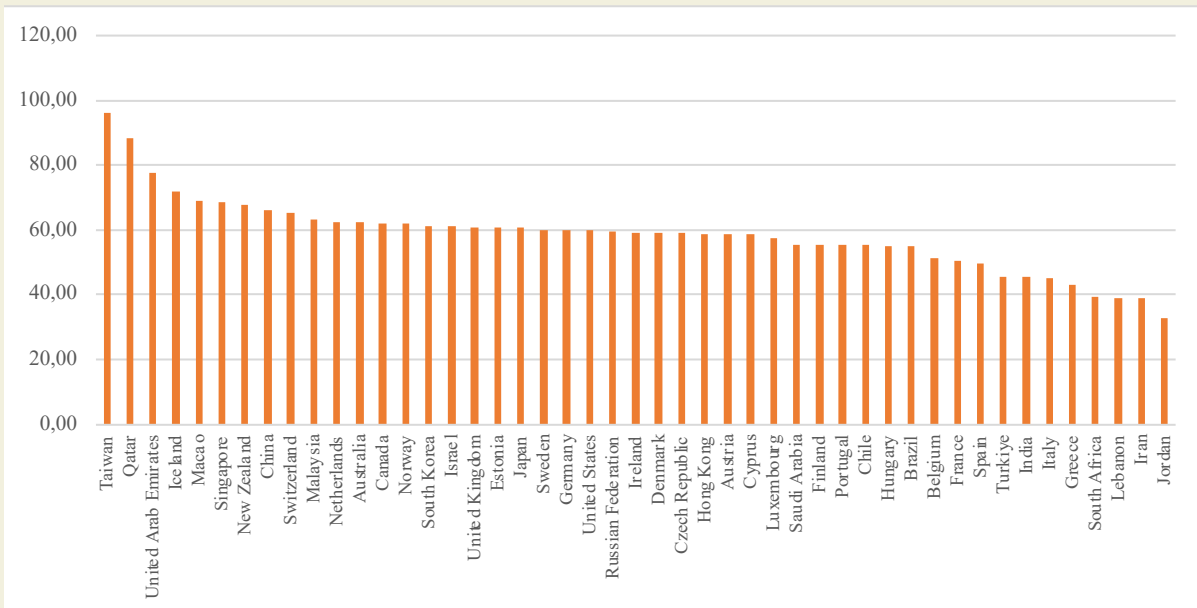


**Figure 2.** GDP (current US dollars) by country



**Figure 3.** Employment rate by country

Note: Taiwan data was taken from CEIC (2022)

Covariance Analysis

|  | GDP | Employment rate | Number of universities |
|---|---|---|---|
| **GDP** | 1.000.000 | | |
| **Employment rate** | 0.034890 (0.8159) | 1.000.000 | |
| **Number of universities** | 0.782086* (0.0000) | 0.012792 (0.9320) | 1.000.000 |

Numbers in parentheses are p-values.
(*), (**) and (***) denote statistical significance at 1%, 5%, and 10%, respectively.

is a correlation between university rankings and GDP in all of them, as as shown by the AREPPIM (2014) study.

In contrast to the GDP, Figure 5 shows that there is no correlation between the employment rate of countries and the number of universities in the top 500. This view is supported by straight line regression (correlation) lines. Compared to other countries, although the US, UK, and Germany had average employment rates, they had the most universities in the top 500 around the world.

# 5. Conclusion

This study examined the correlation between university rankings and the economic performance of countries, if university rankings are used as a proxy for the quality of higher education in that country. The findings indicate that there is a correlation between the GDP (or the size of the country's economy) and the number of universities in the top 500, but there is no correlation between the employment rate and the number of universities in the top 500 in 2019. Hence, GDP performance rather than the employment rate of countries has an impact on university rankings (or the quality of higher education).

However, the results display that certain countries are ahead (e.g., the US, UK, and Germany) or behind the current trend (e.g., China, Japan, and India) in terms of the correlation between GDP and the number of universities in the top 500. So this will bring the following dilemma: whether countries have universities in the university rankings because they have better economic performance, or whether they have better economic performance
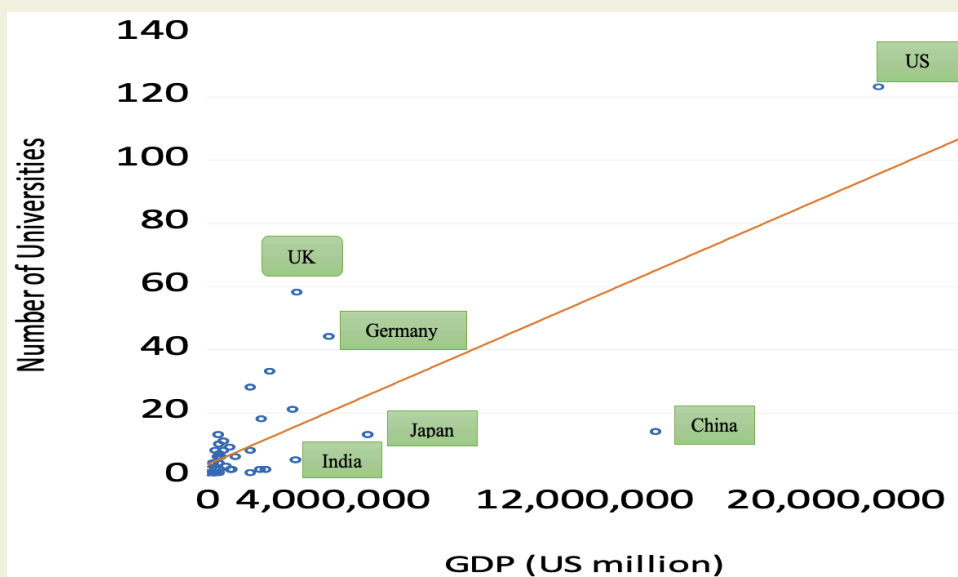


**Figure 4.** Correlation of the number of universities and GDP in 2019
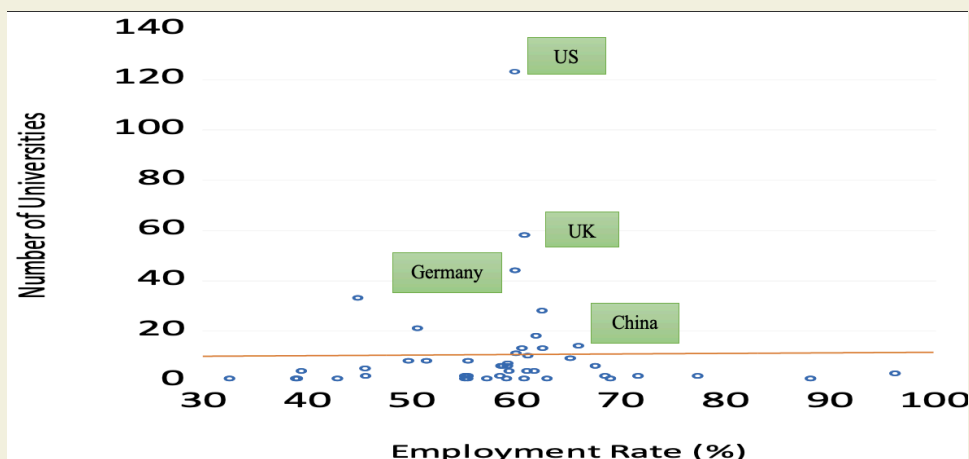


**Figure 5.** Correlation of number of universities and employment rate in 2019

because they have universities in the world university rankings. Therefore, the correlation analysis in this study should be enriched by a causality analysis so that the question "Which comes first? Economic performance or university rankings?" can be answered.

In addition to that, this study might be done by using other world university rankings data such as Academic Ranking of World Universities (ARWU) and QS World University Rankings, which have different methodologies for calculating university scores. Besides, the COVID-19 pandemic's impact on university rankings regarding economic performance might be examined. In addition to GDP, other indicators of economic performance such as GDP growth rate, GDP per capita can be used for robustness. In sum, the findings of these studies might be useful for policymakers in countries who want to improve the quality or visibility of their higher education systems. It is so obvious that the good reputation of universities is due to the fact that university rankings and the economic performance of countries are somehow interrelated. Thus, education and economic policymakers should study together.

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