Vol. 26 No. 2

Global & Local Economic Review 2022

McGraw-Hill Education

Global & Local Economic Review

Volume 26 No.2 2022

€ 13,00 (i.i.)

www.mheducation.it

ISSN: 1722-4241

POLICY FOR THE SUBMISSION OF MANUSCRIPTS TO BE PUBLISHED IN GLOBAL & LOCAL ECONOMIC REVIEW

1. PRELIMINARY INSTRUCTIONS

For a manuscript to be accepted for publication in the Review, authors are required to abide by the publication rules and publication ethics that can be found on http://www.gler.it/. In particular, authors must state that:

- The manuscript, or relevant parts of the manuscripts, was not previously published;
- The manuscript is not simultaneously under review by any other journal (in whole or in part);
- The manuscript will not be submitted elsewhere before a decision is made by the Review;
- All data in the manuscript are real and authentic and there is no conflict of interest for any author.

2. MANUSCRIPTS SUBMISSION

Manuscripts must be submitted to the Editorial Team by e-mail at gler@fondazionepescarabruzzo.it. Manuscripts must be submitted following the instructions for authors (see http://www.gler.it/) and should include the main text, any additional materials, any footnotes, references, an Abstract not longer than 300 words, and one or more JEL codes (no more than five) available at https://www.aeaweb.org/econlit/jelCodes.php.

It is author's responsibility to ensure that manuscripts are written in clear and comprehensible English. Following the guide for authors, each author's institutional affiliation, telephone number, and e-mail address should be written on the first page of the manuscript. In the case of co-authorship, the authors should write who of them is in charge of corresponding with the editors.

3. REVIEWING PROCESS

Each manuscript is first assessed by an Editor from the Editorial Team and, if judged suitable for publication in the Review, is then sent to three reviewers for a rigorous double-blind peer review.

- The initial decision by the two Editors takes about two weeks.
- Authors will be informed of the review decision and all relevant comments by the reviewers within approximately two months.

Based on reviewers' comments and recommendations, the Editor then decides whether the manuscript should be accepted as it is, reviewed and resubmitted, or even rejected. In any case, the authors will be provided with constructive feedback and suggestions for manuscript improvement. In the case of acceptance, the publication process will start by assigning the manuscript a DOI code and, then, a volume number, an issue number, and page numbers of the Review. Proof corrections and the printing process takes approximately one month.

4. MISCELLANEOUS

Should it become necessary in the future, authors submitting manuscripts to the Review could be invited to contribute as reviewers, too. The articles published in Global & Local Economic Review are listed in EconLit and eJEL bibliographies (American Economic Association).

Global & Local Economic Review

Editorial Office: Corso Umberto I, n. 83, 65122 Pescara (Italy)
Telephone: +39 085 4219109 - Fax: +39 085 4219380
http://www.gler.it/ - gler@fondazionepescarabruzzo.it
Indexed in the electronic bibliography of the American Economic Association (EconLit and eJEL)

McGraw-Hill Education (Italy) S.r.l.
Corso Vercelli, 40 – 20145 Milano
Tel. 02535718.1 - www.mheducation.it

Portfolio Manager: Daniele Bonanno
Produzione: Victoria Garcia Daganzo
Stampa: Logo Srl, Borgoricco (PD)

McGraw-Hill Education (Italy) 2020
Printed
ISSN (print) 1722-4241 - ISSN (online) 1974-5125

Global & Local Economic Review

Volume 26 No. 2 **2022**

TABLE OF CONTENTS

G. & L. E. R., Vol. 26 No. 2, 2022

Sara Attar[1] - Rida Waheed[2]

THE ROLE OF THE ENTERTAINMENT INDUSTRY IN ACHIEVING SUSTAINABLE ECONOMIC GROWTH: THE CASE OF SAUDI ARABIA

Received: 21 December 2020 / Accepted: 17 March 2022

Abstract

This study attempts to explore the main causes of economic instability in Saudi Arabia. In addition, we investigate the significance of nonoil exports, industrialization, technological development, tourism and the entertainment sector in attaining sustainable economic development. The findings confirm the significant and positive coefficient for nonoil exports, industrialization and entertainment sector, while oil exports have reported a negative impact on the long-run economic growth of Saudi Arabia. In brief, it is recommended that Saudi Arabia transform its economic policies to attain sustainable economic development by shifting its dependence from oil exports to other economic sectors.

JEL CLASSIFICATION: L82; O1

KEYWORDS: SAUDI ARABIA; NONOIL EXPORT; TOURISM; ENTERTAINMENT; SUSTAINABLE ECONOMIC GROWTH

1. Introduction

The 2014 collapse in oil prices is one of the largest oil-price shocks in modern history. The decline in oil prices was caused by rapid efficiency gains in U.S. shale oil production, a shrinkage effect of geopolitical risks, the inability of the Organization of Petroleum Exporting Countries (OPEC) to regulate global oil supply, and reduction demand prospects. Among oil-exporting countries, those with more diversified economies and larger fiscal

[1] Department of Business Administration, College of Business. University of Jeddah. Saudi Arabia; *E-mail address*: Saraattar123@yahoo.com
[2] Finance and Economics Department, College of Business. University. Saudi Arabia; *E-mail address*: ridawaheed.sdu@gmail.com

buffers fared better than others. However, limited prospects of a substantial recovery in oil prices from current levels could have lasting implications for potential growth in oil exporting countries.

Saudi Arabia is one of the five founding members of the OPEC whose economy was affected by the sharp decline in oil prices between mid-2014 and early 2016; therefore, many serious economic problems appeared in the Kingdom. Examples included unemployment, reduction of the stock market, and low per capita income. As an oil exporting country, Saudi Arabia's unemployment levels have increased due to its heavy dependence on oil revenues and lesser dependence on other industries. Major changes in the price of oil are likely to be followed by real effects over the longer term of the stock market. In addition, experts confirm that oil price reductions substantially affect the Kingdom's GDP per capita income and have a huge impact on the standard of living of individuals in Saudi Arabia.

Figure 1. Oil exports of Saudi Arabia (billion USD)

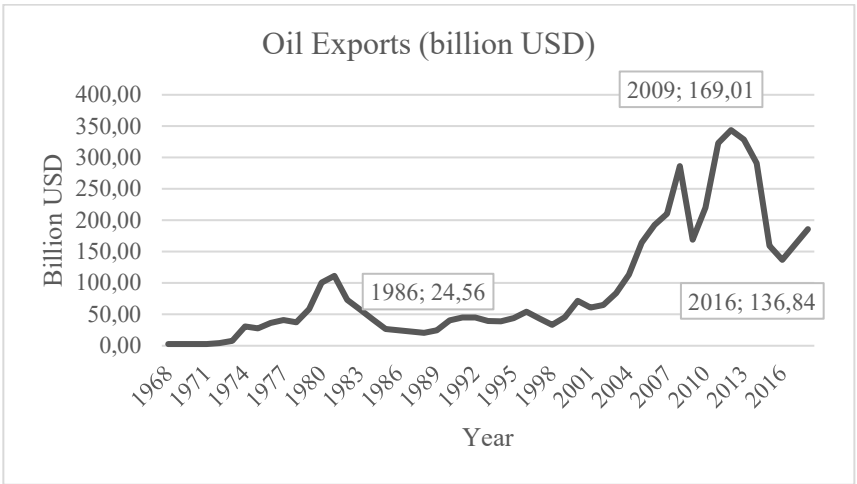
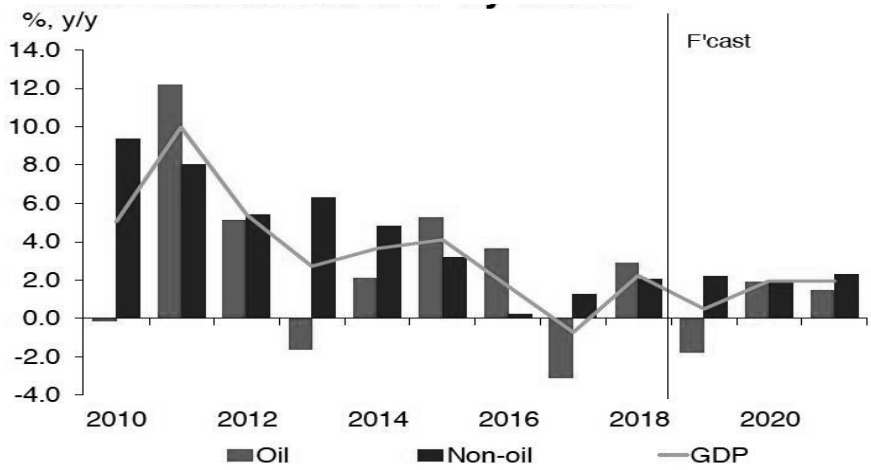


Figure 2. Saudi Arabia's real GDP different rates by sector between 2010 and 2020. In addition, the chart illustrates the Kingdom's heavy reliance, especially on the oil sector compared to nonoil sectors.



Source: Oxford Economics

The Solow Growth (Labour and Capital) Model is the starting point for all analyses in modern economic growth theories. It focuses on long-run economic growth and attempts to explain it by examining capital accumulation, labour or population growth, noting that increases in economic prosperity are linked with labour and capital. Later, a number of researchers mentioned more factors that are important for economic growth, such as inflation, interest rate, tourism, money supply, innovation, entrepreneurship, and political stability (Alodadi and Benhin 2015, Johnson 2010, Alhowaish 2016; Sarwar et al., 2017; Shahbaz et al., 2017; Wahed et al., 2020). (Alodadi and Benhin 2015, Johnson 2010, Alhowaish 2016) have concluded that tourism and refining tourism plans have a critical role in supporting the kingdom to maintain stable economic growth in the long run and diverse nonoil sources of the economy; thus, its dependence on oil revenues gradually decreased (Khan 2013, Sabri and Hamdan 2019, Hamdan Khamis, Al Hawaj and Barone 2019) found that entrepreneural activity development has positive effects on economic growth in Saudi Arabia. In addition, the government's role has an extreme impact in supporting the relationship between entrepreneurship and economic growth in GCC countries. In the case of the

UAE, the studies confirmed that public governance support has a significant effect on entrepreneurship programs and enhances the progress of economic development.

1.1 Contribution of study

In the case of Saudi Arabia, the country is facing multiple challenges at the same time, such as oil price decline and increase in military expenditure to fight against terrorism in Yemen. Similarly, the significant decline in tourism due to terrorism and fewer facilities in the tourism sector are also catastrophes. All these factors present an alarming situation because the annual growth rate has decreased in the past few years. Instead, Saudi Arabia has had to decrease its dependence on oil exports over time, increase non-oil exports, promote the tourism sector, and introduce industrial and entrepreneurial reforms to achieve more sustainable growth in the future. Most importantly, given the contribution of the current study, it is recommended that Saudi Arabia promote entertainment activities that have a positive impact on economic indicators, which directly and indirectly boost local tourism, develop tourism-related businesses, increase local consumption, and provide employment opportunities. Thus, this study investigates the importance of the entertainment sector for the Saudi economy to attain sustainable economic growth.

2. Literature

Alodadi and Benhin (2015) reported in their study the critical role that tourism, especially religious tourism, play in maintaining stable economic growth in the long run, as the Kingdom must diversify non-oil sources of the economy, and thus its dependence on oil revenues gradually decreases. This study used a time-series approach between 1970 and 2011 to investigate the effects of tourism on the prosperity of the economy in Saudi Arabia. The findings have indicated two positions: first, when considering the economy with all its oil and non-oil sources, tourism did not significantly affect economic growth. Second, if only non-oil resources are considered, the study confirmed the important impact of the tourism industry on the Kingdom's economic returns.

Johnson (2010) documented the critical economic risks faced by Saudi Arabia, and to counteract these risks, specific tourism training and education skills can be provided to support effective tourism to increase the country's

economy. The study reported refining and developing tourism plans to create sustainable internal tourism that interacts with different sectors of Saudi society as individuals as well as companies, depending on firm tourism plans that reinforce the Kingdom's economy.

In the case of the Gulf Cooperation Council (GCC) countries, Alhowaish (2016) reported a positive relationship between high tourism rates and economic situation improvement in GCC countries. The study used paned data for the period 1995-2012 and evaluated the impact of tourism on economic growth in GCC countries individually and collectively using a panel Granger causality analysis approach. The results showed no relationship between tourism and economic development; in the case of Kuwait, Saudi Arabia, Qatar and the United Arab Emirates, it is the economy that supports tourism in these countries, as hypothesized. For Bahrain, the hypothesis is inverted, meaning that tourism growth led to economic growth in this country.

Khan (2013) investigated the existing entrepreneurship development in Saudi Arabia. In addition, it determined that the ability to intervene stimulates the growth of entrepreneurship, which has a positive effect on the economic growth of the Kingdom. To understand the existing entrepreneurial activities and explore entrepreneurship ecosystem development, a set of various types of recourses have been used in the cross-sectional basic study. The results have confirmed that ecosystem factors assisting entrepreneurship in the Kingdom are not complete or in their early stages, especially those related to effective strategies and companies' levels that support and motivate entrepreneurship. On the other hand, opportunities are widely available, and government modifications have become common.

In a study on the GCC countries, Sabri and Hamdan (2019) focused on measuring the contribution of the government of the GCC countries to act as a link between entrepreneurship and economic growth. To determine the role of these governments, the study used a 10-year time series (2006-2015) for six GCC countries. Data were collected from The World Bank database, general statistics on the GCC, the Index from the Global Entrepreneurship and Development Institute (GEDI) and the Global Entrepreneurship Monitor (GEM) database. The findings have confirmed that the government's role has an extreme impact in supporting the relationship between entrepreneurship and economic growth in GCC countries. Risk capital and high growth are signs of a fast increase in entrepreneurial activities in these countries. On the other hand, technological knowledge and the ability to innovate indicators were found to be the lowest. In the case of the United Arab Emirates (UAE),

Hamdan, Khamis, Al Hawaj and Barone (2019) examined the intercession role of public governance between entrepreneurship and the country's economic growth. The study tests the impact of advances in entrepreneurship activities on economic growth rates through a 20-year time series analysis (1996-2015), public governance, and mediator model. The results have confirmed that public governance support has a significant effect on entrepreneurship programs and enhanced the progress of economic development in the UAE. In addition, the study proposed proposals to foster entrepreneurship activities because they have a major and effective impact on the growth of the UAE's economy.

After examining the previous literature, it has been observed that earlier studies have failed to investigate the role of the entertainment industry in economic growth. As such, to address this gap, this research examines the impact of the entertainment industry on the economic growth process.

3. Data and Methodology

3.1 Data Introduction

The historic oil export shocks of Saudi Arabia are given in Figure 1, mentioning that there are 3 significant declining trends of oil exports: approximately 1986 due to the oil price war between OPEC countries, 2008 due to global financial crises and the 2014 oil price war in oil-producing countries. As seen in the figure, there are 3 significant declining trends of oil exports: approximately 1986 due to the oil price war between OPEC countries, 2008 due to global financial crises and the third is the 2014 oil price war in oil-producing countries. Even with the frequent oil price shocks in history, the Saudi Arabian economy remains very dependent on oil revenues, and 80 percent of export revenues come from the sale of oil, as shown in Figure 2.

Figure 1. Oil exports of Saudi Arabia (billion USD)

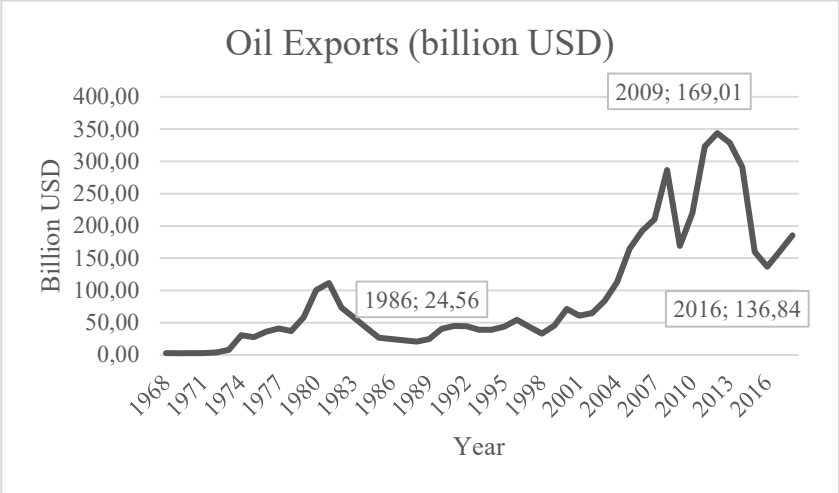
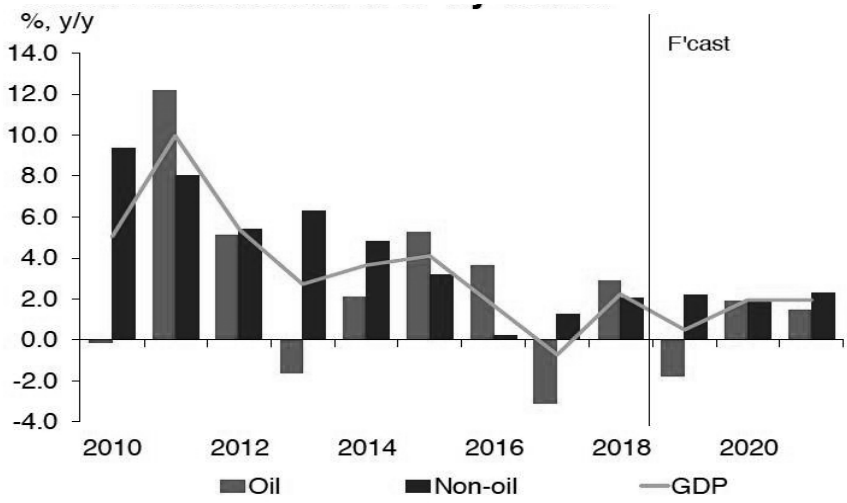


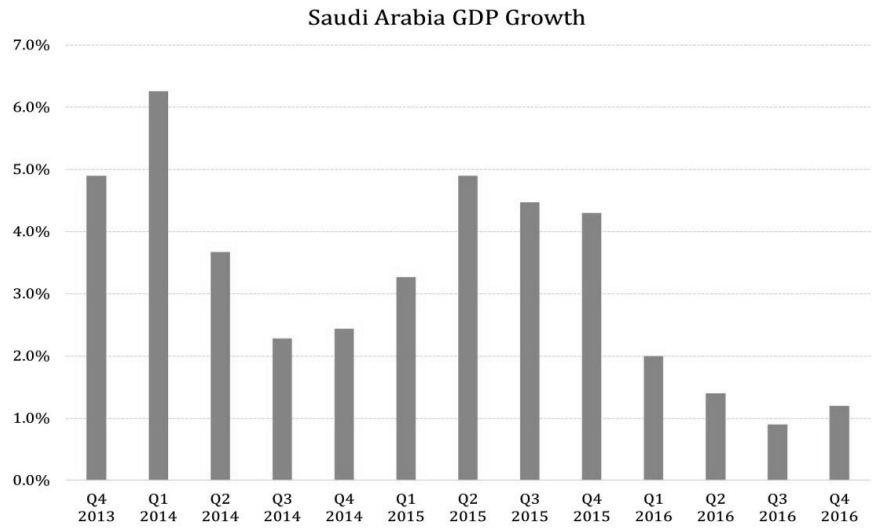
Figure 2. Saudi Arabia's real GDP different rates by sector between 2010 and 2020. In addition, the chart illustrates the Kingdom's heavy reliance, especially on the oil sector compared to nonoil sectors.



Source: Oxford Economics

Figure 3 presents the data for the GDP growth of Saudi Arabia from 2013 to 2016. It shows that GDP growth declines significantly due to a reduction in oil prices and tourism.

Figure 3. Decreasing GDP growth in Saudi Arabia between mid-2014 and early 2016 due to the largest oil-price shocks and other challenges that faced the Kingdom.



Source: Central Department of Statistics & Information

The data used for this study focus on Saudi Arabia, which covers the time period from 1968 to 20183. For the study, the data were collected from World Development Indicators (https://databank.worldbank.org/source/world-development-indicators). The yearly data for the entertainment industry were obtained from the General Authority of Statistics Kingdom of Saudi Arabia (https://www.stats.gov.sa/en/491-0). We used the natural logarithm of each variable to transform the variables, as follows by (Sarwar, Alsaggaf, and Tingqiu 2019; Shahbaz, Tang, and Shahbaz Shabbir 2011; Waheed, Sarwar, and Mighri 2020)

[3] Missing data was generated through ipolate/epolate as mentioned by Sarwar et al., (2018).

The Solow growth model (1956) was used to examine the impact of labour and capital for the case of Saudi Arabia. Afterwards, the models were extended by including oil exports, which indicates the role of oil exports in economic prosperity in Saudi Arabia. Model-3 is the extension of model-2, which further examines the importance of non-oil exports in the Saudi economy. Model-4, Model-5 and Model-6 investigate the role of technology, industrialisation and tourism in the economic growth process. The studied models are given below:

Models:

$$GDP = \beta_0 + \beta_1 L + \beta_2 K + \varepsilon \quad \text{eq-1}$$

$$GDP = \beta_0 + \beta_1 L + \beta_2 K + \beta_3 Oil + \varepsilon \quad \text{eq-2}$$

$$GDP = \beta_0 + \beta_1 L + \beta_2 K + \beta_3 Oil + \beta_4 non - Oil + \varepsilon \quad \text{eq-3}$$

$$GDP = \beta\_0 + \beta\_1\, L + \beta\_2\, K + \beta\_3\, Oil + \beta\_4\, non - Oil + \beta\_5\, Technology + \varepsilon \quad \text{eq-4}$$

$$GDP = \beta\_0 + \beta\_1\, L + \beta\_2\, K + \beta\_3\, Oil + \beta\_4\, non - Oil + \beta\_5\, Technology + \beta\_6\, Industry + \varepsilon \quad \text{eq-5}$$

$$GDP = \beta\_0 + \beta\_1\, L + \beta\_2\, K + \beta\_3\, Oil + \beta\_4\, non - Oil + \beta\_5\, Technology + \beta\_6\, Industry + \beta\_7\, Tourism + \varepsilon \quad \text{eq-6}$$

$$GDP = \beta\_0 + \beta\_1\, L + \beta\_2\, K + \beta\_3\, Oil + \beta\_4\, non - Oil + \beta\_5\, Technology + \beta\_6\, Industry + \beta\_7\, Tourism + \beta\_8\, Entertainment + \varepsilon \quad \text{eq-7}$$

where GDP stands for the gross domestic product for Saudi Arabia (constant 2010 US$). L is the total labour force available in Saudi Arabia. K presents the capital, which is defined as gross fixed capital formation (current US$). Oil and non-Oil are the oil exports and non-oil exports for Saudi Arabia, respectively, measured in current US$. Technology was used as a proxy of innovation, which was high-technology exports (current US$). Industry represents industrialization in Saudi Arabia, which is measured by industry value added in US$. Tourism was international tourism receipts in current US$. Most importantly, entertainment was one of the key variables for this study, which was obtained from the General Authority of Statistics Kingdom of Saudi Arabia.

4. Results and Discussion

4.1 Descriptive

Table 1 represents the descriptive statistics for the studied variables. There is no sign of outliers in the transformed dataset, as mentioned from the minimum, maximum, and standard deviation. However, we can conclude that the data are appropriate for regression estimations. Moreover, Table 2 shows the correlation results of the studied variables.

Table 1. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
GDP	51	26.538	0.486	25.064	27.260
Labour	51	15.575	0.455	14.907	16.473
Capital	51	25.599	1.208	21.747	27.318
Oil export	51	24.657	1.280	21.716	26.563
Non-Oil export	51	21.519	2.672	15.748	25.087
Technology	51	15.113	4.187	6.815	23.637
Industry	51	26.155	0.426	24.830	26.722
Tourism	51	14.305	7.937	-0.468	23.521
Entertainment	51	21.205	0.307	20.899	22.311

Table 2. Correlation matrix

	GDP	Labour	Capital	Oil export	Non-Oil export	Technology	Industry	Tourism	Entertainment
GDP	1								
Labour	0.87	1.00							
Capital	0.96	0.80	1.00						
Oil export	0.93	0.82	0.94	1.00					
Non-Oil export	0.89	0.91	0.83	0.89	1.00				
Technology	0.87	0.94	0.78	0.82	0.97	1.00			
Industry	0.97	0.77	0.92	0.87	0.78	0.76	1.00		
Tourism	0.85	0.93	0.75	0.82	0.96	0.97	0.75	1.00	
Entertainment	0.70	0.83	0.62	0.57	0.69	0.78	0.62	0.69	1.00

4.2 Regression estimation

The findings of the regression estimations are given in Table 3, which presents the coefficient results from model-1 to model-6. Model-1 indicates the significance of the Solow growth model in the case of Saudi Arabia, as the coefficients of labour and capital are significant and positive. In Model 2, oil exports have an insignificant coefficient, which indicates that an increase in oil exports is not a prominent measure of sustainable economic growth in Saudi Arabia. This finding is in line with (Waheed, Sarwar, and Dignah 2020). For model-3, we include non-oil exports to investigate the role of non-oil exports in the economic growth process of Saudi Arabia and to compare it with oil exports. Interestingly, the coefficients for oil exports and non-oil exports are insignificant, mentioning that exports are not a significant contributor to economic growth.

In model-4, we further extend the model by adding technology, which is a proxy for innovation in Saudi Arabia. The coefficient for technology is 0.055, significant at the 1% level of significance, indicating that higher innovation leads to an increase in economic growth in Saudi Arabia. The findings are in

line with (Kesici Çalkan 2015; Long 2019; Nardone and Ridolfi 2019; Pece, Simona, and Salisteanu 2015; Shahzad, Qin, and Farooq 2019)

While reporting the results of model-5, we found significant and positive coefficients for labour, capital, non-oil exports and industrialisation. However, the coefficient of oil exports became significant and negative, implying that Saudi Arabia is not able to achieve long-term economic growth by exporting oil products. Model-6 added tourism in model-5, and the findings for model-6 are similar to those for model-6. The coefficient of tourism is insignificant, suggesting that tourism has no contribution to the Saudi economy in the studied period. The main contribution of the current study was to examine the role of the entertainment sector in Saudi GDP; however, model-7 augments model-6 by adding entertainment variables.

After the empirical estimations, quantile regression and the autoregressive distributed lagged (ARDL) approach were used for robust estimations, as reported in Table 4. We found similar results for all the studied variables. Labour, capital, non-oil exports, industrialisation and entertainment have significant and positive relationships with economic growth. On the other hand, in the long run, dependency on oil exports is significant and negative, which is an alarming situation for the Saudi economy, which still relies on oil exports.

Table 3. Regression results

Variable	Model-1	Model-2	Model-3	Model-4	Model-5	Model-6	Model-7
Labour	0.315*** (0.000)	0.314*** (0.000)	0.228*** (0.003)	0.046 (0.554)	0.130*** (0.000)	0.126*** (0.000)	0.145*** (0.000)
Capital	0.292*** (0.000)	0.289*** (0.000)	0.299*** (0.000)	0.300*** (0.000)	0.111*** (0.000)	0.113*** (0.000)	0.112*** (0.000)
Oil export		0.003 (0.932)	-0.030 (0.526)	0.012 (0.798)	-0.027** (0.020)	-0.0271** (0.033)	-0.0288** (0.044)
Non-Oil export			0.026 (0.132)	-0.048 (0.143)	0.029*** (0.000)	0.027*** (0.001)	0.027*** (0.003)
Technology				0.055*** (0.003)	0.004 (0.428)	0.004 (0.449)	0.007 (0.270)
Industry					0.613*** (0.000)	0.609*** (0.000)	0.614*** (0.000)
Tourism						0.001 (0.704)	0.007 (0.772)
Entertainment							0.006** (0.02)
Constant	14.160*** (0.000)	14.176*** (0.000)	15.495*** (0.000)	18.040*** (0.000)	5.621*** (0.000)	5.756*** (0.000)	5.930*** (0.000)

Notes: ***,**,* represents the level of significance at 1%, 5% and 10%, respectively. The values in brackets are p values of each coefficient.

Table 4. Robust estimations

Variable	Quantile Regression		ARDL	
	Coef	p value	Coef	p value
Lag-GDP	-	-	0.094	0.007
Labour	0.120	0.000	0.177	0.000
Capital	0.129	0.000	0.090	0.000
Oil export	-0.031	0.007	-0.027	0.006
Non-Oil export	0.028	0.013	0.020	0.016
Technology	0.003	0.653	0.008	0.205
Industry	0.591	0.000	0.580	0.000
Tourism	0.001	0.772	0.002	0.392
Entertainment	0.009	0.048	0.046	0.094
Constant	6.220	0.000	4.947	0.000

Notes: ***,**,* represents the level of significance at 1%, 5% and 10%, respectively. The values in brackets are p values of each coefficient.

4.3 Discussion

While discussing the applicability of the Solow growth model, in the case of Saudi Arabia, it can be concluded that labour and capital are some of the most prominent factors of economic growth. However, the Saudi government must take pre-emptive measures to increase capital investment and the labour force. The findings are in line with (Sarwar, Chen, and Waheed 2017; Shahbaz et al. 2017; Sarwar et al. 2018; Sarwar, Alsaggaf, and Tingqiu 2019; Waheed, Sarwar, and Dignah 2020).

Oil export is one of the key sources of income generation for the Saudi government, contributing approximately 80% of total exports (McIntosh 2020). This proves the dependence of the Saudi government on oil, which is not guaranteed for long-term economic growth, as shocks in oil prices, oil demand and oil supplies have devastating impacts on the Saudi economy (Waheed, Sarwar, and Dignah 2020). However, our findings for oil exports validate export diversification theory to attain sustainable economic growth.

The coefficients of non-oil exports for model-5 and model-6 are significant and positive, which confirms that Saudi Arabia must diversify its exports to have long-term economic prosperity.

Technology has reported mixed evidence; however, the role of innovation in triggering the economic process cannot be neglected. It provides the opportunity to increase the exports of technological equipment, which increases cash inflows (Chansarn 2010; Pan et al. 2019; Subrahmanya and Kumar 2011).

Industrialisation has a positive relationship with economic growth, as indicated by the significant and positive coefficient of industry. The results suggest that the Saudi government must introduce industrial reforms, attractive packages for foreign direct inflows, plan new industrial zones with facilities, etc. The era of industrializsation is useful for resolving a number of economic issues, such as unemployment and oil dependency.

Surprisingly, the coefficient of tourism is insignificant, which negates the findings of (Waheed, Sarwar, and Dignah 2020). The insignificance can be due to the inclusion of long-term data that cover the period of non-tourism activities in Saudi Arabia. The Saudi government has recently focused its attention on the tourism sector. However, in the future, the tourism sector will participate in economic growth.

The empirical estimation of model-7 reports the significance of the entertainment sector, which is significant at the 5 percent level, mentioning that the Saudi economy can achieve sustainable growth by diverting its attention towards the entertainment sector. The growth of the entertainment sector contributes to economic prosperity by using a number of channels, such as creating employment opportunities and creating more room to increase the spending of domestic persons. Instead of the significant and positive coefficient of entertainment, the magnitude of the coefficient is very low (0.006), which indicates that serious and prompt actions are required by the Saudi government to attain sustainable economic growth.

5. Conclusion

The objective of the current study was to find the key issues that are dragging the Saudi economy and what measures are essential for the Saudi government to attain sustainable development. For this purpose, we have used ordinary least square estimation, quantile regression, and the autoregressive distributed lagged approach over the data of 1968-2018. The empirical estimations have confirmed the significant and positive coefficients of labour, capital, non-oil export, industrialisation and entertainment. However, oil

exports have a significant and negative coefficient, indicating that higher oil exports lead to a decrease in the economic growth process.

The findings are fruitful for policy-makers who draw economic policies. We recommend a number of policy implications. First, Saudi Arabia needs to urgently shift its policies from oil to non-oil exports. This will help the diversification of the economy and make it less affected by oil price shocks. In the long run, the dependency on oil exports is not a wise decision; however, the government has to support non-oil industries to increase their share in economic prosperity, which requires sustainable development. Fossil fuels are the main source of environmental degradation; hence, diverting to non-oil exports will support economic growth and enable the country to meet sustainability goals set in Vision 2030. Second, the government has to promote domestic and international tourism, as the tourism industry plays a role in economic prosperity. For this, it is suggested that the local authorities advertise tourism places, hire trained staff, and provide adequate knowledge to the local community, which can help tourists in the case of non-availability of tour guides. In particular, local governments are urged to improve the infrastructure of tourist locations. These changes will attract more tourists to visit the country's recreational sites. Although religious tourism is the main economic sector, through these measures, entertainment tourism will also develop, and this sector will generate more revenue. Finally, it is proposed that the Saudi government must provide entertainment opportunities at a reasonable charge instead of higher prices, which encourages local and foreign tourists to promote the entertainment industry. A reasonable price will increase the number of visitors, which will increase sales and profit as well. In such cases, the entertainment industry can play a substantial role in achieving sustainable economic growth. When more people enjoy entertainment activities, it increases tourism. Additionally, more accommodation facilities will be needed, which will affect the growth of the hotel sector. In addition, more demand for food and transportation will be created, which will affect the growth of the food and transportation sector. Similarly, demand for local labour will be enhanced. All these changes ultimately affect economic growth.

References

Alodadi A, Benhin J. (2015), *Long Term Economic Growth in Oil-Rich Saudi Arabia: What Is the Role for Non-Oil Sectors?*, Economic Issues Journal Articles, 20(1), 109-129.

Bala Subrahmanya, M.H., Sudhir Kumar R. (2011), Technological *Innovations and Energy Intensity of Machine Tool SMEs in Bangalore: Do Process Innovations Contribute to Energy Efficiency?*, International Journal of Energy Technology and Policy, 7(5–6), 519-536.

Chansarn S. (2010), *Labor Productivity Growth, Education, Health and Technological Progress: A Cross-Country Analysis*, Economic Analysis and Policy, 40(2), 249-261.

Çalişkan K.H. (2015), *Technological Change and Economic Growth, Procedia-Social and Behavioral Sciences*, 195, 649-654.

Long X. (2019), *Scientific and Technological Innovation Related to Real Economic Growth*, China Political Economy, 2(1), 108-122.

McIntosh M. (2020), *How 2020's Oil Prices Will Challenge Saudi Arabian Economic Diversification*, Atlas Institute for International Affairs, https://www.internationalaffairshouse.org/how-2020s-oil-prices-will-stall-saudi-arabian-economic-diversification.

Nardone P., Ridolfi N. (2019), *Work and Tourism in Libya between Fascism and the Second World War*, Global and Local Economic Review, 23(2), 91-107.

Pan X., Uddin M.K., Han C., Pan X. (2019), *Dynamics of Financial Development, Trade Openness*, *Technological Innovation and Energy Intensity: Evidence from Bangladesh*, Energy, 171, 456-464.

Pece A.M., Simona O.E.O., Salisteanu F. (2015), *Innovation and Economic Growth: An Empirical Analysis for CEE Countries*, Procedia Economics and Finance, 26, 461-467.

Sarwar S., Alsaggaf M.I., Tingqiu C. (2019), *Nexus Among Economic Growth , Education , Health , and Environment: Dynamic Analysis of World-Level Data*, Frontiers in Public Health, 7, 1-15.

Sarwar S., Chen W., Waheed R. (2017), *Electricity Consumption, Oil Price and Economic Growth: Global Perspective*, Renewable and Sustainable Energy Reviews, 76, 9-18,

Sarwar S., Waheed R., Amir M., Khalid M. (2018), *Role of Energy on Economy the Case of Micro to Macro Level Analysis*, Economics Bulletin, 38(4), 1905-1926.

Shahbaz M., Sarwar S., Chen W., Malik M.N. (2017), *Dynamics of Electricity Consumption, Oil Price and Economic Growth: Global Perspective*, Energy Policy, 108, 256-270.

Shahbaz M., Tang C.F., Shabbir M.S. (2011), *Electricity Consumption and Economic Growth Nexus in Portugal Using Cointegration and Causality Approaches*, Energy Policy, 39(6), 3529-3536.

Shahzad U., Qin F., Farooq M.U. (2019), *Capital Flight, Terrorism and Military Expenditures: Empirical Evidence from Sub-Sahara African and MENA Region*, Global and Local Economic Review, 23(1), 39-64.

Solow R.M. (1956), *A Contribution to the Theory of Economic Growth*, The Quarterly Journal of Economics, 70(1), 65-94.

Waheed R., Sarwar S., Dignah A. (2020), *The Role of Non-Oil Exports , Tourism and Renewable Energy to Achieve Sustainable Economic Growth : What We Learn from the Experience of Saudi Arabia*, Structural Change and Economic Dynamics, 55, 49-58.

Waheed R., Sarwar S., Mighri Z. (2020), *Role of High Technology Exports for Energy Efficiency : Empirical Evidence in the Context of Gulf Cooperation Council Countries*, Energy & Environment, 32(5), 803-819.

APPENDIX

Table A1. Literature highlight

No	Author(s)	Method(s)	Data	Region	Variable	Main Finding(s)
1	Waheed et al. (2020)	ARDL bound test, Johansen co integration and Gregory-Hansen co integration methods	1980-2017 Quarterly	Saudi Arabia	economic growth, non-oil exports, and tourism	Findings propose that upgrading the non-petroleum sends out will be a great procedure for maintainable development of Saudi Arabia.
2	Albassam (2015)	Ogive Index, Entropy Index, Gini Index and Herfindahl Index	1970–2013 yearly	Saudi Arabia	Economic diversification	Oil is the main factor for driving the economy for Saudi Arabia.
3	Chirila et al. (2020)	autoregressive distributed lag (ARDL) and causal analysis	2000–2019 monthly	Central and Eastern European Countries	economic growth and tourism growth	The effect of occasions impacts the heading of the relationship between international Tourism, and financial growth.
4	Haller et al. (2020)	convergence model	2012 and 2018	Europe	tourism and economic growth	It is found that convergence was not quickened but moderate, and it was not decided by tourism factors but by related ones.

Table A1. Literature highlight (continued)

5	Chatziantoniou (2012)	VAR model	2000-2010 monthly	France, Italy, Spain and Greece	Oil price shocks, Tourism income and Economic growth	Oil particular request stuns contemporaneously influence expansion and the tourism segment value record, while these stuns do not appear to have any slacked impacts.
6	Chou (2013)	panel causality method	1988–2011 yearly	transition countries (Bulgaria, Romania And Slovenia etc.)	Tourism spending and Economic growth	The results show that non-partisanship theory is within the nature of a causal heading between tourism investing and financial development.
7	Du et al. (2014)	tourism-growth model	1950 and 2014 yearly	109 countries	Tourism and Economic Growth	Findings indicate that, speculations in tourism in and of itself show up to be inadequate for financial development.
8	Jawadi and Ftiti (2018)	TAR model	1970 to 2016 Quarterly	Saudi Arabia	Oil Price and Economic Growth	Findings confirm the commitment of the oil division to financial development within the nation, but moreover appear that the oil/Saudi economy relationship shows nonlinearity and edge impacts.

Table A1. Literature highlight (continued)

9	Lee and Chang (2007)	multivariate model	1990–2002	OECD and non OECD countries	Tourism development and economic growth	It is found that within the long run, the board causality test appears unidirectional causality connections from tourism improvement to financial development in OECD nations, bidirectional connections in non OECD nations, but as it were frail connections in Asia.
10	Wang et al. (2020)	System Dynamic (SD) method	2010-2016 Yearly	China	Tourism Carrying Capacity and Tourism economic growth	The results demonstrate that the environmental situation re-enactment contributes to both TCC and Tourism financial growth.
11	Perles-Ribes et al. (2017)	vector auto regression (VAR) model	1955-2014 Yearly and quarterly	Spain	Tourism-led growth	Results indicate a bidirectional relationship between the development of tourism request and the economic Growth of Spain when connected to genuine series.
12	Sillah (2014)	cointegration	1974-2011 Yearly	Saudi Arabia	technology diffusion	The study found that the universal exchange, especially the oil division exchange, of Saudi Arabia shows up to play no significant part within the worldwide innovation exchange.'

G. & L. E. R., Vol. 26 No. 2, 2022

Paola Nardone* – Natascia Ridolfi**

NEED OR FAR SIGHTEDNESS: LOOKING FOR GOLD DURING THE FASCIST AUTARKY PERIOD

Received: 27 May 2021 / Accepted: 24 January 2022

Abstract

The topic of autarkic policy, the strengthening of certain productions and sectors has over time interested scholars from many disciplines and in recent years the discussion has been enriched by new works that have provided food for thought, revitalising the debate on the subject.
The essay analyses unpublished documentation consulted at the Bank of Italy archives and supported by an extensive literature on the subject. The aim of the research is to highlight the salient features of the autarkic policy with particular reference to the national gold industry and the role of the colonies in the discovery of the precious mineral.

JEL CLASSIFICATION: N00; N01; N54

KEYWORDS: GOLD, AUTARCHY, COLONIES, ITALY, FASCISM

1. Introduction

The theme of autarky-based policies, strengthening certain productions and sectors, has interested scholars from many disciplines over time, and in recent

* University of Chieti-Pescara, Viale Pindaro 42, Pescara 65127, Italy, E-mail address: paola.nardone@unich.it
** University of Chieti-Pescara, Viale Pindaro 42, Pescara 65127, Italy, E-mail address: natascia.ridolfi@unich.it
^ Although the present essay is the result of a work of common analysis the paragraphs n. 1, 2, 3 are by Paola Nardone and n. 4, 5, 6, 7 and 8 are by Natascia Ridolfi.

years, such a discussion has been enriched by new studies that have provided food for thought, revitalising the debate on the subject.

Our essay, which draws inspiration from some still unpublished documents we consulted at the archives of the Bank of Italy, together with other primary and secondary sources, grey literature and various essays on the subject, aims to highlight the crucial features of Italian autarky, especially in regard to the national gold industry, as it was called upon to participate in the realisation of the Fascist empire.

During the 1930s, such an Empire was being built on the ideology of wealth, power and greatness of the new colonialist Italy. Our article aims to highlight the role of gold within the economic context of the country, as well as the frantic activity the Fascist government carried out to set aside the gold stocks that were to be used as a means of payment in foreign trade, but even more so as an expression of the nation's power and strength. Furthermore, we intend to understand why the executive branch of the Italian government prepared a production plan for the gold sector, investing resources and labour, even as it was aware that the national deposits would not be particularly productive from the outset.

2. The ideology of a myth: The Fascist empire

In the beginning, the creation of the empire took root through the spread of the ideology of conquest and later with its implementation. The purpose of expansion gradually structured itself by moving from discussions in parliamentary halls to proclamations in the streets, directly involving the Italian people. .

The imperialist project began to make its rounds in the first moments of the Fascist government. It was widely known that Benito Mussolini taught the empire to be "the cornerstone of life for all peoples that aim to expand themselves both economically and spiritually" (Mussolini 1934-1939, p. 374). The idea of the empire was integrated into the reality of Italy and Italians: "Fate wants the Mediterranean back into our hands and that Rome may direct Western Europe again. Let's raise the flag of the empire and of our imperialism, which should not be confused with the Prussian and English ones" (Susmel E., Susmel D. 1951-1963, p. 159).

The colonial policy of the Duce was presented as the legacy of the imperial tradition of ancient Rome, of which the grandiose experience of conquering Italy had been a protagonist. According to some scholars, Mussolini might

even have been «completely a prisoner of Rome's myth he felt he had to rebuild, like Augustus or one of the great pontiffs of the Renaissance» (Torchiani 2009, p. 202)[1].

During the two decades of the Fascist regime, the expansion project became the prerequisite for imposing the autonomy and dominance of Italy internationally, effectively shifting the centre of gravity of the regime's interests overseas. However, a form of colonisation was hypothesised that, at least in appearance, distanced itself from European-style colonisation. The Italian empire had to be built on the principles of "association and cooperation towards the common greatness and power" (Napolitano 1936, p. 226). Both Italy and its colonies, which stretched from the Alpine boundaries, i.e., from the heart of Europe to Northern Africa (Bottai 1936, p. 322), joined together places that were far apart but were managed through cohesion- and continuity-based policies. In fact, the theoretical vision of Fascist expansion was not to be based on ties and subservience, as such constraints belonged to the old stereotype of conquest. The most significant difference lay in the inspirational motive of the expansion, which was characterised by the civilising action that the country intended to carry out in the new lands, as stated by the Duce himself:

> The Fascist state is based on a will towards power and command. Here, the Roman tradition is an idea of power. In the doctrine of Fascism, an empire was not just a territorial or military or mercantile expression but a spiritual or moral one. One can think of an empire, a nation that leads other nations, be it directly or indirectly, without having to conquer a single square kilometre of territory (Mussolini 1932, p. 851).

The government, as it was immersed in such a sense of Roman and Latin spirituality, fostered a connection between the motherland and the new lands based on relations that traced back to an ambitious anthropological, humanistic and universalistic mission of which the Duce was the architect, establishing and building the myth of the empire (Cofrancesco 1980, p. 395). As stated by Pasetti, the Italian colonial policy intended to affirm a "self-representation of Fascism as a brand-new, innovative and momentous political force" (Pasetti 2016, p. 3). The moral testament of the empire was established as its deepest meaning, which was to influence the country's thinking, actions and way of life within the new global dimension, as it was known in the past

[1] On this, please see also some cornerstone essays, such as Gentile (1975), Gentile (2001) and Labanca (2002-2005).

and had to become a priority for Italy and the Italians once again. Thus, the population was asked to create an empire that would last for centuries, populated by a new civilisation-the Fascist civilisation, i.e., a new race-considered 'chosen' as Roman and 'superior' as the Duce intended (Gentile 2001, p. 279; Braun 2008, p. 85).

The empire and its ideology were two sides of the same coin, two roads of the same journey, which provided for different but resonating modalities and actions. The practical action was shaped as activities and interventions in the new territories, while the other aimed at spreading 'imperial sentiment', which was:

> In the organic unity of both the Metropolis and Overseas Italy; being fully aware of the fact that the Italian factor went from Europe to the world, we have to move our sight and our plans accordingly. We know that, since such a value can be seen in the uninterrupted universalism of Ancient Rome (both in the era of the Caesars and during Christianity) and of Humanism, not only in the resurgent universality of our thinking but also in the oceanic routes of our trade and war vessels, in the clairvoyant daring of our Atlantic pilots and primate holders, as well as in the mighty expansion of the Ala Littoria flight routes (Longo 1937, pp. 227-228).

Furthermore, with the Italian conquest of African territories, the country was making 'a qualitative leap', completing a process of self-referentiality in the eyes of the world (Deplano 2015, p. 118). The greatest obstacle was not the military and financial commitments but the acceptance of imperial Italy, which struggled to be conceived as such, both by the newly annexed countries and by those in Europe. Indeed, dissent from Europe took the government by surprise; at first, the executive branch believed that it would receive approval from Europe or at least not be condemned. This was obviously a mistaken belief, or a hope in vain, of which the Duce was so persuaded that he even reported a completely different opinion on this in 1934 to Pietro Badoglio, the future conqueror of Addis Ababa: 'no one will raise difficulties for us in Europe if the quick managing of our military operations determines a *fait accompli*. It will be enough to declare to England and France that their interests will be recognised'» (Rochat 1971, p. 378). Therefore, in its imperial guise, Italy, supported by a new identity of 'strength' intended to become a kind of modern lifeblood for Europe (Campana 1933, p. 171).

The ideological assumption of conquest did not exempt the government from facing practical difficulties in the economic, strategic, political, social and demographic domains (Airoldi 1937, 388). Indeed, the government was ready to undertake any effort towards affirming the power and autonomy of

the nation: «power is undoubtedly a means of wealth, the spread of civilisation and general belonging to the same type of civilisation are undoubtedly coefficients of wealth» (Mazzei 1937, p. 1087). Suffice it to think, for example, about the mercantilist philosophy that had openly inspired the actions of governments during the modern age with the precepts of «the greatest possible wealth, the greatest possible power, the greatest population possible» (Mazzei 1924, p. 393). It was precisely in relation to wealth that the Fascist government began to draw up its plans to increase the quantities of gold, the possession of which also represented the greatest expression of state 'power', especially in the case of a nation that wanted to declare its political, economic and commercial supremacy. Another lever of wealth was trade, a sector that was widely considered during the Fascist colonial expansion (Mazzei 1924, p. 402). Indeed, trading with colonies was a basic element of Italian power politics, as it was a cornerstone of the imperial project of the country (Hirschman 1987, p. 75). Trade with the colonies guaranteed outlet markets and a supply of raw materials, offering the autonomy of relations that could eradicate the existing ties with European countries, thus eliminating their dependence on trade.

Therefore, the empire became the emblem of Italy's economic autonomy (Rumi 1974, pp. 127-129) and its totalitarian policy, finding complete support from the population, unaware of the fact that the dream would soon turn out to be «a tragic failure» (Acquarelli 1922, p. 30), anticipating a more ominous scenario, i.e., that of the Second World War, and Italy was already preparing for it (Granzotto 1938).

3. Economic autarky in Italy

The autarkic programme, which took its first steps after the war in Ethiopia and the subsequent sanctions by the League of Nations, an organ that was termed “a mistaken masterpiece” (Panunzio 1935, p. 36) within the regime circles, was devised between the end of 1935 and 1937 by representatives of the guilds, organised in eighty commissions, through a programme of economic autonomy for the country (Petri 2022, p. 125). It was structured on the fundamental principle of Italy's economic independence from abroad, something needed to affirm the prestige of the nation (De Jordo 1940).

In its 'ideal' sense, autarky hypothesised a total closure of imports and a convenient flow of exports. Reality, on the other hand, dictated that it should, in any case, contemplate import-export relations; after all, it was the head of

government himself who stated in his speech to the Assembly of Corporations on 23 March 1936 that «no nation in the world can make the ideal of economic autarky a reality on its own territory in the absolute sense, i.e., achieving it 100 per cent, and even if it could, it would probably not be useful» (Vito 1938, pp. 866-867).

With such a background, trade had to be oriented towards balance (Guarnieri 1938a, p. 22). A first step in this direction was taken by discouraging, where possible, imports from countries that had not signed clearing agreements with Italy, i.e., some pacts aimed at offsetting debt or credit positions arising from trade. For example, in 1937, the Italian trade featured imports with clearing amounting to LIT 6,768.6 million out of LIT 13,488.8 and exports with clearing totalling LIT 4,784.9 million out of LIT 7,848.8 million. However, imports without clearing were still substantial, as they amounted to 6,720.2 million Lire, while exports without clearing amounted to 3,099.9 million Lire (Mortara 1938, p. 137). Therefore, the Italian government decidedly pushed towards enhancing trade within the clearing-based network. To achieve this goal, the Italian government signed new agreements, which increased from 16 to 23 between 1936 and 1939 (Federico 2002).[2]

However, there was no lack of initiatives aimed at fostering export activity in general; for example, the National Foreign Exchange Institute prepared a series of interventions, including the provision of monetary support in the event of significant price fluctuations, the elimination of the exchange tax, and the possibility of discounting bills of exchange from foreign trade transactions at Italian banks (Rasi 1983a, p. 160). Such supporting measures were supported by the Italian government, which was certainly concerned about the economic and social context, something that was beginning to be strained by certain tensions, including rising unemployment, which was fuelling emigration, taking population and members of the workforce away from the country during its most delicate, autarkic, pre-war moment: "enhanced exports of finished products avoided the exports of work; that is to say, it avoided the 'awful bleeding' of temporary or permanent workforce migration" (Gardini 1939, p. 9).

The autarkic policy, as was the case with Italian imperialism, surely ruffled some feathers internationally, with the harshest and most severe criticism coming from the United Kingdom:

[2] For further information on the matter, please see: Demaria (1939).

If there is one country in Europe that is incapable of being self-sufficient, it is Italy. The following table can give an idea of Italy's natural resources compared to those of the United States:

	Coal (Millions of tons)	Lignite (Millions of tons)	Oil	El. Power (millions of h. p.)	Forests (hectares)
Italy	144	181	------	3.000	6
United States	1975.000	1.865.000	2.029	42.000	249

For other raw materials, Italy is in an even worse position. The country could hardly come to more than 30% of the raw materials it needs. […] Mussolini is still carrying out and supporting his autarkic policies, only to escape the growing difficulties of Italy[3].

Such dissent was published in an article titled "The crisis of Italy" published on 27 December 1937 in the «Financial News» magazine. The article commented on the economic initiatives of the Fascist government with some irony, coupled with stark disappointment for autarkic policies. The magazine published articles critical of Italy, yet accepted paid Italian advertising at the same time. Therefore, albeit against its better wishes and indirectly, the Fascist government ended up financing its own disrepute as it bought space in the magazine[4].

Beyond the rhetoric and evaluations of other states, autarky was an expression of the country's need to internally produce everything that had hitherto been imported from abroad, resorting also to the production of substitutes or goods that satisfied, in some way, national demand. Although Italy had many economic and social criticalities, such as limited means of payment on the foreign market, weak colonial markets, and a growing population (which was pressing on available resources), it decided to adopt the autarkic programme to improve both its internal conditions and its international position. The aim of the plan was to put the country on an equal footing in foreign trade (Rasi 1983b, p. 127). This was reiterated in 1938 by the Minister for Trade and Currency, Felice Guarneri, in a speech to the Italian Chamber of Deputies:

Autarky, insofar as it aims to maximise the resources of the soil, subsoil and technology, and to develop the economy of the Empire on the level of national needs, does not mean the closed state, detached from the currents of international life; instead, it admits the possibility of

[3] Bank of Italy Historical Archive, (from now on ASBIT (t), Bank of Italy, Special Secretariat, folder no. 16, file 1, *Lettera di Giuseppe Nathan (delegato della Banca d'Italia a Londra) a Vincenzo Azzolini, Governatore della Banca d'Italia,* 9 December 1937.
[4] Ivi, *Lettera di Giuseppe Nathan a Vincenzo Azzolini,* 23 December 1937.

developing a broad system of exchange relations with all countries, willing to accept our products in exchange for theirs, on a reciprocal basis (Guarnieri 1938b, pp. 25-26).

In so doing, the Italian government intended to limit its dependency on foreign products and establish more balanced relations with the rest of the world. It did not want to isolate the nation but intended, instead, to provide it with more solid contractual power. The aim of the autarkic policy was to give the country an autonomous and significant international role, implemented exactly by the adoption of the "politics of power" (Lenti 1938, p. 844).

Basically, the autarkic programme brought about a different kind of trade, where "the demand for foreign goods could be less rigid and foreign demand for domestic goods was to be less elastic" (Vito 1943, p. 10). Therefore, a new *modus vivendi* was forced on citizens-consumers and to operators-producers in order to enhance «the national ingenuity, work, production, technology and savings», achieving a kind of social justice able to remove inequality within the populace.

It goes without saying that, as far as the productive fabric of the nation was concerned, the autarkic settings did not affect all economic operators equally: activities run by public bodies or the state scrupulously observed its precepts, those run by companies and private entrepreneurs applied its provisions only loosely (Petri 2002, pp. 127-128).

4. Gold and trade within the international context

From the 1930s onwards, for many countries, the shortage of gold holdings coincided with the crisis of the Gold Standard system.

Those states that held scarce quantities of that metal in their central banks struggled to secure their debt positions arising from foreign trade, finding it difficult in the event of deficits in their balance of payments (Eichengreen 1994, pp. 237-241). Such issues were also noted by the governor of the Bank of Italy, Vincenzo Azzolini, who reported them to the head of the Italian government: «Furthermore, since the currency we receive is not sufficient for indispensable payments, gold is sent abroad almost daily [....] to convert it into currency and pay our creditors»[5].

[5] ASBIT (t), Bank of Italy, Directorate, Azzolini, folder no. 90, file 3, *Lettera del governatore V. Azzolini a S. E. Benito Mussolini,* Rome, 5 november 1935.

During the 1930s, the amount of gold in the central bank vaults of some state actually began to decline, as can be inferred from the table below.

Table 1. Gold held within the central banks (in fine gold tonnes)

Countries	Late 1934	Late 1935	Late 1936	Late 1937	Fine 1938
United States	7.569	9.302	10.341	11.723	13.331
United Kingdom	1.460	1.521	2.379	2.476	2.476
France	5.003	4.039	2.752	2.357	2.232
USSR (*Esteemed quantities)	672*	810*	997*	997*	1.061*
Netherlands	527	402	450	855	913
Switzerland	572	418	600	595	643
Belgium	540	537	582	550	534
Spain (*Esteemed quantities)	682	675	613*	514*	418*
Argentina	370	408	460	431	399
Sweden	145	170	222	225	295
India	251	251	251	251	251
Italy	476	248	193	193	160
Japan	360	392	424	241	151
Other countries	1.540	1.547	1.537	1.524	1.576
TOTAL	20.167	20.720	21.801	22.932	24.440
Gold in Western countries, including the reserves and the stabilisation of changes	2.559	3.151	3.250	3.299	3.019
Global golden stock overall	22.726	23.871	25.051	26.231	27.459

Source: Zuccoli (1939, p. 407).

The gold stocks of both the United States and the United Kingdom were exceptions to the general trend of the other countries' reserves, and their gold stocks reflected the positive and consolidated economic positions within the world context. The U.S.S.R. also increased its quantities of the metal, but this increase can only be attributed to assumed data.

Slowly, such a situation, in addition to various economic and financial interventions, led to a 'rush' on gold, which also took the form of an attempt to intensify its production. New mines were discovered in Siberia, Australia,

New Zealand and Canada, and existing mines in the United States, Canada and South Africa were reactivated (Eichengreen 1994, pp. 370-371).

All of this highlighted a heavy reality: in the 1930s, only four nations could be declared true gold producers, holding the entire world production of the metal, as shown in the table below.

Table 2. Worldly gold production (in thousands of fine gold ounces)

Year	South Africa	USSR	United States	Canada	Other countries	World total	World total in billion $
1930	10.716	1.501	2.286	2.102	4.318	20.923	732
1931	10.878	1.656	2.396	2.694	4.702	22.326	781
1932	11.559	1.938	2.449	3.044	5.264	24.254	849
1933	11.014	2.700	2.537	2.949	6.326	25.526	893
1934	10.480	3.858	2.916	2.972	6.950	27.176	951
1935	10.774	4.500	3.619	3.285	7.376	29.554	1.034
1936	11.336	5.280	4.296	3.748	8.338	32.998	1.155
1937	11.735	5.000	4.753	4.096	9.304	34.888	1.221
1938	12.161	5.000	5.008	4.716	9.969	36.854	1.290

Source: The value of gold was calculated on the basis of $35 for an ounce of fine gold (Fabrizi 1939, p. 402).

The search for gold coincided with the beginning of a crisis in the political and economic relations of the international community: the spirit of cooperation between nations that had characterised the first post-war period disappeared.

The need to increase the quantities of this noble metal involved all states and was also felt by those countries that did not have rich deposits but that nevertheless acted in favour of the sector. In Romania, production premiums were granted, in France, special funds were set up for gold operators, and Japan adopted a policy to find gold on the world market, a strategy that provided the country with the necessary quantities to meet domestic needs but whose purchase was made at very high prices, probably the most expensive of the period (Fabrizi 1939, p. 403).

The reduced availability of gold soon affected trade, which in 1937, contracted by approximately one-quarter compared to the pre-war period.

Table 3. World trade volume in gold dollars

Years	Imports	Exports
1913	21.258.900.000	19.759.900.000
1929	34.673.000.000	31.983.100.000
1937	15.452.500.000	14.737.800.000

Source: Zuccoli (1939, p. 408).

The very same difficulties affected the free movement of capital and people as well, as was the case with the conditions within the various nations, many of which began to adopt autarkic or pseudoautarkic policies.

> And countries that yearned for progress, that wanted to arm themselves civilly, industrially, had to look to an autarkic regime as a means of financing themselves. However, what is worse, autarkic principles inspired the monetary policy of the same countries that had the most abundant gold reserves, and that had given imperial functions to their currency (Zuccoli 1939, p. 417).

It is worth remembering that some countries with stronger economic positions than Italy tacitly introduced forms of protectionism in favour of their economies or of certain production sectors. England, for example, was among the first nations to incentivise the primary sector in 1931 with the enactment of the Agricultural Act and, in 1932, to support the domestic market with the promulgation of the Import Duties Act and the Ottawa Agreements Act. The United States moved in this direction even before the New Deal policy (1933–1939), applying the Smoot-Hawley tariff in 1930 to disincentivise imports and, in 1933, to privilege the purchase of American goods over foreign goods once the Buy American Act had been issued (Rasi 1983b, p. 130).

5. The Italian national gold: Power and wealth

The gold industry was fully included in the Italian national autarkic programme with the aim of increasing its availability in the nation. The plan in the gold industry was organised around a number of basic measures that contemplated the development of exploration activities in deposits and along rivers and granted funding to operators in the sector.

Exploration activity was motivated by the fact that many strands could be reached and exploited with the help of new equipment, which was more innovative than that used at the end of the 19th century. In addition, many

problems that had hindered exploration and extraction had been solved, such as the difficulties in transporting minerals within the mines, the inconveniences caused by the splitting of concessions on deposits, and some technical problems, including the extraction of gold in the presence of excessive amounts of arsenic that hindered the amalgamation process and thus extraction.

When it came to concessions, both fiscal and administrative subsidies were provided for the benefit of the mining companies, such as the granting of customs exemptions for equipment and machinery, certain facilities for bureaucratic practices such as permits, concessions, authorisations and the like, and the granting of several concessions for mining companies. It goes without saying that in Italy the need to increase gold production derived precisely from the awareness of its scarce presence in the deposits; the discovery of new veins would have facilitated the realisation of the imperial dream. In fact, gold production in Italy, understood as a source of wealth, had always been marginal, but it became important in the autarkic period because it fully responded to the need for independence and autonomy felt, as we have said, both by Italy and the other European states (Capodoglio 1973, p. 5).

Italian gold production was not constant over time: it shifted between peaks of substantial extraction and phases of scarce quantities. The table below shows data for the 1878-1938 period.

Table 4. Gold production in Italy (in kilos)

Years	Quantity	Years	Quantity	Years	Quantity
1878	145	1898	156	1918	-----
1879	197	1899	92	1919	-----
1880	209	1900	58	1920	-----
1881	214	1901	5	1921	2
1882	218	1902	1	1922	60
1883	180	1903	63	1923	38
1884	210	1904	10	1924	48
1885	209	1905	15	1925	60
1886	195	1906	78	1926	54
1887	234	1907	58	1927	53
1888	354	1908	71	1928	58
1889	408	1909	15	1929	48
1890	393	1910	24	1930	53
1891	284	1911	55	1931	67
1892	284	1912	33	1932	58
1893	231	1913	27	1933	80
1894	319	1914	-----	1934	77
1895	280	1915	2	1935	90
1896	221	1916	-----	1936	115
1897	290	1917	-----	1937	96
				1938	170 (estimated figure)

Source: ASBIT (t), Bank of Italy, Azzolini Directorate, folder no. 87, file 1, sub-file 2, *Agevolazioni alla produzione di oro,* p. 2.

After significant production, amounting to 408 kg in 1889, the quantities of gold continued to decrease, achieving significantly smaller results that approached zero during the 1914–1920 period.

Although it was never particularly substantial, the officially declared weight of gold was still less than the quantity that was actually produced. In fact, it was not unusual for some of the ore to be hidden immediately after extraction by private individuals and foreign companies that had been given management of the deposits in the past.

At any rate, Italy could not be considered a gold-producing country, as such a raw material was sorely lacking. However, given the Italian national context and the importance that new extractions of the metal represented, the Ministry of Corporations also examined the possibility of introducing, as an incentive,

production bonuses, a kind of contribution similar to those offered for other minerals such as sulphur, lead and zinc.

The proposal, after a careful cost-benefit analysis, was not implemented. The idea was to include the amount of any and all production prizes in the purchase price of gold.

> Should a premium of 4–5 thousand lire is paid for each kilogram of gold produced above the price corresponding to the legal parity of the lira […] with a change in the effective purchasing price, the gold standard of the lira would be implicitly reduced proportionally to the increase in the effective gold price[6].

This would have resulted in a de facto depreciation of the national currency, the value of which would have fallen proportionally to the increase in the price of gold.

> However, being faced with a limited economic advantage for the activity in question [….] would always be a serious inconvenience, since the payment of a premium for gold production, even when it took place in a disguised form, could be judged as the consecration of a de facto devaluation of the lira[7].

Beyond such drawbacks, the autarkic policy pushed the gold industry to increase gold production, something the Italian government had significant hopes for.

6. Gold mines in Italy: looking for them and using them

During the autarkic period, the policies of the Italian government were geared towards consolidating the nation's wealth. In this context, special attention, as mentioned above, was paid to gold, a precious and valuable mineral that would not only provide valuable support for the new empire but also consolidate the nation's wealth. These two aspects fulfilled obvious needs both on an economic-financial level and in regard to Italy's relations with other countries. Indeed, the shortage of gold or, at the very least, its presence in limited quantities, fuelled doubts about the solidity of the state, which became more vulnerable in the eyes of the world. The most widespread opinion in political and government circles attributed to gold a significance

[6] ASBIT (t), Bank of Italy, Azzolini Directorate, folder no. 87, file 1, sub-file 2, *Agevolazioni*, p. 3.
[7] ASBIT (t), Bank of Italy, Azzolini Directorate, folder no. 87, file 1, sub-file 2, *Nota per S. E. il governatore, Agevolazioni alla produzione di oro,* p. 2.

that went far beyond its economic and financial effects. It was argued that ample holdings of the metal would have represented for Italy a 'repellent' against the sanctions imposed by the League of Nations, becoming a sort of protective shield for the country.

> However, if Italy had held thirty or forty billion gold coins or rods in its state coffers, barely half as much as some coalition states, economic sanctions would have been meaningless because they would have been ineffective and Geneva would not have thought of using them (De Marsanich 1936, p. 130).

However, as the United Kingdom later recognised, the sanctions did not produce their intended effect; in contrast, the Italian minister Felice Guarneri even considered them a godsend, since they enabled Italy to free itself from the trade constraints that kept it tied to the other European countries, namely, "the agreements with the sanctioning countries expired and we were at least good at ruthlessly cutting off all nonessential imports from those countries" (Hirschman 1987, p. 132). Indeed, as a result of the sanctions, the outflow of gold from the purchase of imported goods was limited, and they were replaced by domestic goods paid for with the work of Italians[8]. It was well known that gold hardly ever crossed the borders of the country in a two-way fashion and was therefore considered lost[9].

Within such a context and as an application of autarkic policies, the Italian national gold industry was subjected to a careful reconnaissance of the deposits in the country. A report transmitted by the Ministry of Corporations to the governor of the Bank of Italy outlined the guidelines of a multi-layered plan, which included actions to be undertaken and support tools to be introduced. The text was also submitted to the inter-ministry council for autarky, specifically including the location of mines.
The supposedly abundant deposits, where gold had been mined in the past, were to be found in Valle d'Aosta (Evançon Valley) and Piedmont (Valsesia, Val Toppa, Valle Anzasca, Valle Antrona and Valle Antigorio). In these territories, the executive renewed old concessions and granted new ones: the mining companies involved were asked to carry out careful and detailed explorations and excavations.

[8] Italian Chamber of Deputies, *Discussions*, in «Parlamentary acts», Meeting of 10 March 1936, p. 2186. (Rossoni, the Minister for Agriculture and Forestry)
[9] Ivi, Meeting of 9 March 1936, p. 2161. (Mario Cingolani)

In Valle d'Aosta, in the Evançon area, permits were granted to search for gold seams parallel to those already known at Arbaz and Fenilliaz, activities that also involved the mines in Valsesia where the buildings belonging to the Alagna mine were reactivated.

In Val Toppa, where the most important auriferous veins in the Alpine area were present, the deposit, which had offered pyrites, auriferous arsenopyrites and free gold in quartz gangue, was unexplored in the Picciocca vein and in those to the left of Val Marmazza. The concession had been awarded to the company Rumianca S.A., which, in addition to equipping the most important tunnels with mechanical, electrical and pneumatic installations, was also preparing to explore new passages. Rumianca was also present in Val Anzasca with mining activities in the Cani mine, from which it extracted arsenical minerals that it then sent to the Pieve Vergonte plant to undergo gold recovery treatment.

Concerning the Val Anzasca valley, the golden lode within the Val Bianca valley came back under the lens after a Belgian company had already worked on it in the past, but its secondary offshoots remained untouched. However, significant production came from the Lavanchetto mine, where a cableway network transported the raw material to the plant for treatment. The processing ensured average concentrates of 80 to 100 grams of gold. The production prospects of the deposit were approximately 50 tonnes of crude per day, for a production that in 1938 reached 46 kg of fine gold with prospects for an increase to 70–75 kg in 1939 (Ivi pp. 8-10).

In the Pestarena mine, which was entrusted in concession to the Fratelli Ceretti company, research began directly into the secondary lodes of Stabioli, Fontana, Calpini, Scarpia, Speranza, Acquavite, Pesciera and Pozzone. It was known that the main branches of the mine had already been extensively prospected by an English company. Gold production in 1938, however, amounted to 100 kg, and again, up to 150 kg of gold was expected to be mined during the following year (Ivi pp. 10-11).

In the Antrona Valley, the Rumianca company, which had become the concessionaire in 1936, began explorations in the Mattone, Mèe, Prebernardo, Locasca and Scalaccia mines, pushing on to the most impervious veins, which presented difficulties in inspecting the ore.

Greater expectations were instead placed in the deposits of the Antigorio Valley, owned by the Azienda Minerali Metallici Italiani company (AMMI), which operated with modern facilities and state-of-the-art equipment (Ivi pp. 11-12).

The gold prospecting programme also included the observation of rivers, natural collectors of the mineral from the erosion of rocks caused by floods. The particular historical moment did not allow any event or opportunity to be overlooked: "in the climate of autarky, no effort must be left undone to implement such a programme, which is of fundamental importance to both our peace and war economies" (Ivi p. 17).

The production of the metal and the particular characteristics of its extraction made it necessary to carefully control the quantities extracted to prevent them from being stolen or dispersed. For this and other reasons, also related to containing the costs of excavation, both in terms of labour and the use of machinery, the centralisation of the entire sector was proposed, that is, the centralised management of the national gold industry by a single administrative entity. Furthermore, such a need was in line with the autarky-based policies and had to be «ascribed both to the special nature of the metal produced (gold production has been and is controlled directly or indirectly by the state in all countries, even in those that followed a liberalist policy); and to the convenience of concentrating the processing of minerals in a few large units, with appreciable economies of both plants and operations» (Ivi p. 18).

7. The gold from the Italian colonies, between needs and mirages

The need to increase the amount of gold in Italy was also brought forwards in the colonial territories, a hope that had already been nurtured during the overseas expansion of liberal Italy and resumed with more vigour by Ferdinando Martini, former Minister of Education in the first Giolitti government and then Minister of Colonies in the first and second Salandra governments, after the first decade of the 20th Century. On the presence of gold in the colonies, he himself reported the following after a trip to Eritrea:

> Things look good. The gold is there; they didn't think they would find it so soon. Even from the single, small lode examined so far, there would be good profit to be made if... if there was coal in the country. So Goffredo tells me, and draws from it the argument to hope that richer lodes will be found (Martini 1934, p. 353).

There were also reassuring news during the 1930s from Luigi Usoni, head of the Eritrean Mining Office, who, in turn, confirmed gold production in the colony, mostly from the Ugarò mine, at 250,066 kg, the amount extracted in 1934 alone (Zaccaria 2005, p. 109; M.P.I.I. 1940).

It is worth emphasising that the search for gold in colonial lands was not touted by the official propaganda channels as an exaggerated interest in the mines could have betrayed the 'noble' aims of Fascist colonialism and lumped Italian expansion with that of other European and non-European countries. In fact, the national occupation, as we have said, had to appear different, as it was aimed at the valorisation of the new lands through investment and emigration and not aimed at mere exploitation (Ertola 2019, p. 224). On the other hand, such activities had to be presented as a form of civilisation, featuring «that moral and theoretical approval the regime needed for its aggressive thrusts, that always aimed to conquer new lands, due to the demographic exuberance of Italians» (Cagnetta 1979, p. 51).

The exploration of mines and mining activities in the colonial territories led the government, in 1936, to formulate a structured and organised programme that resulted in the establishment of an autonomous state-owned company, the Azienda Miniere Africa Orientale (AMAO)[10], placed under the command of the Italian Ministry for Africa. It was actually part of a more ambitious project to establish a real mining service in the colonies, capable of operating even in the particular critical conditions of those territories, i.e., in the presence of insufficient infrastructure, laboratories, equipment and specialised personnel, the latter of which was also insufficient in the motherland and therefore not available for transfer to the new locations (Buccianti, Fusari 2013, p. 169-170).

Therefore, the mining services were designed with offices and laboratories to be set up in the colonial lands; a general mining inspectorate was also established in Ethiopia with headquarters in Addis Ababa. It carried out both bureaucratic-administrative and technical activities in special scientific mining pavilions (Usoni 1952).

Meanwhile, in 1938, a new mining regulation was issued for Italian East Africa to protect the resources of the colonial areas. Greater control was placed on exploration activity, in which the mining concession was distinguished from the exploration permit:

> Investigation licences may be granted for the exploration of certain areas in order to carry out studies, geological and gentisate surveys, sampling for analysis and laboratory tests. Once the presence of useful minerals has been recognised, a prospecting permit may be issued to ascertain the nature and development of the deposits to which the minerals found belong by

[10] The AMAO company was established with the Italian Royal Law-Decree issued on 30 November 1936, no. 2331, which became a Law, namely no. 1085 on 10 June 1937.

means of suitable work. If the size and nature of the deposit ascertained, also taking into account the location, indicate that an economically profitable cultivation can be expected, a mining concession may be granted[11].

Exploration activities were also entrusted to private companies. In western Ethiopia, the Società Anonima per Imprese Etiopiche (S.A.P.I.E.) and its subsidiaries Società Mineraria Italo-Tedesca (S.M.I.T.) and Societè Minière des Concession Prasso en Abyssinie (PRASSO) were active. The mining research covered an area of 40,000 square kilometres and included the Uollega and Benisciangul areas. It employed 85 experts, including engineers, technicians and clerks, and a number of local workers that varied according to need, employing between 8,000 and 10,000 workers. The production expectations were ambitious, as Maurizio Rava, president of S.A.P.I.E. and S.M.I.T., reported in an interview after a long stay in Ethiopia, aimed exactly at organising the work plan.

[…]the concession territories in Uollega and Beni Sciangul - including those in Prasso - offer the best hope for gold and platinum harvesting. But for the results to be profitable, one must not delude oneself into thinking that one can force such yields now with expensive plantings. The lands of the Uollega of the Beni Sciangul yield and will yield: but it is necessary to exploit them in the most economical way, taking advantage as much as possible of the indigenous systems that we have perfected, supervised and directed, keeping labour costs low, realising all possible savings, not thinking in essence of applying expensive industrial plants [...] Here too, therefore, the watchword must be the one that has been at the basis of every activity of valorisation of the Empire: graduality[12].

The still unexplored areas were entrusted to the Compagnia mineraria etiopica (COMINA)[13], which was established nel 1937 by the Società anonima Montecatini in collaboration with the country's largest industrial groups. It also boasted experts, geologists and university professors on its board of directors, and was headed by Guido Donegani, managing director of Montecatini (1910-1945), as well as a member of the chemistry corporation and the commission of corporate economy and autarchy.

The search for gold within mines in the colonies also involved ordinary people and adventurers of all kinds. Some of them even contacted the domestic and foreign offices of the Bank of Italy, which was considered to be

[11] Royal Decree issued on 21 February 1938, no. 1422*, Ordinamento minerario per l'Africa-Orientale Italiana* in «Official Journal of the Kingdom of Italy», year 1938, no. 213, p. 3940.
[12] Ibidem.
[13] Ministry for Italian Africa (ed.), Annals of Italian Africa, 1940, n. 4, p. 1192.

a solid and interested buyer. Gold was offered directly or exploration assignments were requested for a fee on the basis of alleged reports of so-called 'virgin' strands. Many made themselves available as intermediaries between the bank and private individuals, ready to put the institution in contact with gold traders or local natives, hypothetical possessors of the precious metal. The most daring even proposed guaranteed extractions of substantial quantities of gold:

> The absolute knowledge I have of the Lichemti region, the relations I have long had with the most important indigenous families, as well as with the most accredited traders, and my organisation with faithful guides, lead me to the well-founded belief that it would certainly be profitable and worthwhile for me to go and collect gold, which is certainly not negligible; on the other hand, it would indeed be considerable, in the interests of our country[14].

The private individuals who contacted the Bank of Italy were part of that large group of people who, seeking their fortune and in various capacities, revolved around the gold sector and were generally involved in the mining business. It should also be noted that the missives and pseudo job/gold offers were accompanied by extensive supporting documentation, ranging from sworn testimonies to references of all kinds.

8. Conclusions

The autarkic policies featured obvious criticalities that emerged both in the elaboration of the programme and in its implementation. The sectors that struggled most to intensify production were those linked to the scarcity of raw materials, including the national gold industry, which tried to find gold in Italy and in the colonial territories.

In both cases, the results were rather disappointing, especially in the face of the considerable efforts in terms of finance and labour. From that arose the natural awareness that led Italy to change its initial aspirations related to increasing the quantities of gold and its use. In fact, the lack of the metal directed the government towards a policy aimed at diminishing its role in the domestic market and progressively limiting its use as a means of payment in international trade (Fabrizi 1939, p. 414); autarky ended up favouring such activities. Furthermore, the same had happened with silver, a metal that was progressively phased out from markets as a means of payment: “Indeed, silver has gradually lost its monetary character and, as a commodity, has steadily

[14] ASBIT (t), Bank of Italy, Secretariat, folder no. 1418, file 1, *Lettera alla Direzione della Banca d’Italia, Sede di Addis Abeba,* 14 March 1939.

declined in value. Its price on the open market, at which we now buy it, has become a purely political price, being, as is well known, supported for reasons of both foreign and domestic policy, but mainly the internal policies, by the US government"[15].

It was actually understood that those states holding scarce quantities of gold could surrender what meagre metal they held against the "very little likelihood of receiving any" from the four countries that, as we have already explained, held the world's gold stockpiles (Zuccoli 1939, p. 419). Therefore, the different geographic locations of gold led less fortunate nations to look for alternative assessments for precious metals, a tendency present, especially in totalitarian governments. This was the case, for example, with Germany, which, from 1939 onwards, began guaranteeing its domestic currency no longer against the value of gold but against the value of labour and national production (Fabrizi 1939, p. 414).

The very same orientation was also evaluated by Italy through its autarkic policy by limiting its outflows as a counter value to imports.

The effect of this restriction also made it possible to curb the country's dependence on foreign countries, fully complying with the precepts of the regime's autarkic policy, which regarded it as economic subjugation and which clashed too much with the image of the Fascist empire.

Due to the scarce presence of gold in both national and colonial deposits, the metal in Italy did not play an active role in the realisation of the imperial dream and in the affirmation of the country as a 'power' within the international context. The lack of gold in Italy resulted in a shortage that was added to that of other raw materials. Gold was, therefore, unable to offer redemption to the nation, betraying the hopes and the countless efforts of the Fascist government.

Archival Sources

ASBIT (t), Bank of Italy, Special Secretariat, folder no. 16, file 1, *Lettera di Giuseppe Nathan (delegato della Banca d'Italia a Londra) a Vincenzo Azzolini, Governatore della Banca d'Italia,* 9 December 1937.

[15] ASBIT (t), Bank of Italy, Directorate – Azzolini, folder no. 10, file 1, *Lettera del governatore V. Azzolini a S. E. il ministro delle Finanze,* Rome 26 November1939.

ASBIT (t), Bank of Italy, Directorate – Azzolini, folder no. 10, file 1, *Lettera del governatore V. Azzolini a S. E. il ministro delle Finanze,* Rome 26 November1939.

ASBIT (t), Bank of Italy, Directorate, Azzolini, folder no. 90, file 3, *Lettera del governatore V. Azzolini a S. E. Benito Mussolini,* Rome, 5 november 1935.

ASBIT (t), Bank of Italy, Secretariat, folder no. 1418, file 1, *Lettera alla Direzione della Banca d'Italia, Sede di Addis Abeba,* 14 March 1939.

ASBIT (t), Bank of Italy, Special Secretariat, folder no. 16, file 1, *Lettera di Giuseppe Nathan a Vincenzo Azzolini,* 23 December 1937.

ASBIT (t), Bank of Italy, Azzolini Directorate, folder no. 87, file 1, sub-file 2, *Nota per S. E. il governatore, Agevolazioni alla produzione di oro.*

Printed Sources

Italian Chamber of Deputies, *Discussions*, in «Parlamentary acts», Meeting of 10 March 1936, p. 2186. (Rossoni, the Minister for Agriculture and Forestry).

Italian Chamber of Deputies, *Discussions*, in «Parlamentary acts», Meeting of 9 March 1936, p. 2161. (Mario Cingolani).

Royal Decree issued on 21 February 1938, no. 1422*, Ordinamento minerario per l'Africa-Orientale Italiana* in «Official Journal of the Kingdom of Italy», year 1938, no. 213, p. 3940.

Ministry for Italian Africa (ed.), Annals of Italian Africa, 1940, n. 4.

References

Airoldi A. (1937), *L'Impero come prassi*, Critica fascista, 23, 387-388.

Acquarelli L. (1922), *Il fascismo e l'immagine dell'impero*, Donzelli, Roma.

Bottai G. (1936), *Sul piano imperiale*, Critica fascista, 21, 321-323.

Braun E. (2008), *L'arte dell'Italia fascista: il totalitarismo fra teoria e pratica*, in E. Gentile (eds), *Modernità totalitaria. Il fascismo italiano*, 85-99, Laterza, Bari-Roma.

Buccianti C., Fusari V. (2013), *Percorsi africani. Saggi storico-demografici e antropologici a sud del mediterraneo*, Libreria scientifica, Siena.

Cagnetta M. (1979), *Antichisti e impero fascista*, Dedalo, Bari.

Campana M. (1933), *L'impero fascista*, Vallecchi, Firenze.

Capodoglio G. (1973), *Sui moderni usi monetari dell'oro e di suoi «surrogati»*, Giornale degli Economisti e Annali di Economia, 1- 2, 1-7.

Cofrancesco D. (1980), *Appunti per un'analisi del mito romano nell'ideologia fascista*, Storia contemporanea, 3, 383-411.

De Jordo V. (1940), *Terreno dell'autarchia*, Critica fascista, 9, 157-160.

De Marsanich A. (1936), *Orientamenti di attualità*, Critica fascista», 9, 129-130.

Demaria G. (1939), *Sulla teoria dei "clearings" complementari nel quadro dell'autarchia di approvvigionamento*, Giornale degli Economisti e Annali di Economia, 3-4, 225-250.

Deplano V. (2015), *L'Africa in casa*, Le Monnier, Firenze.

Eichengreen B. (1994), *Gabbie d'oro. Il «Gold standard» e la Grande depressione 1919-1939*, Laterza, Bari.

Ertola E. (2019), *Predatori fascisti dell'impero*, in P. Giovannini, M. Palla (eds), *Il fascismo dalle mani sporche*, pp. 218-235, Laterza, Bari.

Fabrizi C. (1939), *Produzione e distribuzione dell'oro*, Geopolitica, 7-8, 401-414.

Federico G. (2002), *Autarchia* in V. de Grazia, S. Luzzatto, (eds), Dizionario del fascismo, 113-120, Einaudi, Torino,.

Gardini D. (1939), *Scienza e autarchia*, Officine grafiche Mantero, Tivoli.

Gentile E. (1975), *Le origini dell'ideologia fascista*, Il Mulino, Bologna.

Gentile E. (2001), *Il culto del littorio. La sacralizzazione della politica nell'Italia fascista*, Laterza, Roma-Bari.

Granzotto G. (1938), *Conoscere l'Impero*, Critica fascista, 21, 324-325.

Guarneri F. (1938b), *La politica economica dell'Italia nei rapporti internazional*i, Chamber of Deputies, Rome.

Guarnieri F. (1938a), *Autarchia e commercio estero*, Libreria dello Stato, Rome.

Hirschman A.O. (1987), *Potenza nazionale e commercio estero*, Il Mulino, Bologna.

Labanca N. (2002-2005), *Impero*, Dizionario del fascismo, vol. I, 659-662, Einaudi, Torino.

Lenti L. (1938), *I traffici con l'estero nel 1929 e nel 1937*, Giornale degli Economisti e Rivista di Statistica, 11/12, 831-844.

Longo G. (1937), *La cultura sul piano imperiale*, Critica fascista, 13, 227-229.

M.P.I.I. (1940), *Sul panorama minerario dell'Impero*, Materie prime dell'Italia e dell'Impero, 9, 413-141.

Martini F. (1934), *Lettere 1860-1928*, Mondadori, Milano.

Mazzei J. (1937), *Le conseguenze economiche del possesso coloniale per la madrepatria*, Rassegna economica dell'Africa italiana, 8, 1084-1098.

Mazzei J. (1924), *Politica economica internazionale inglese prima di Adam Smith*, Vita e Pensiero, Milano.

Mortara G. (1938), *Il commercio italiano con l'estero nel 1937*, Giornale degli Economisti e Rivista di Statistica, 2, 118-142.

Mussolini B. (1934-1939), *Scritti e discorsi*, vol. 12, Hoepli, Milano.

Mussolini B. (1932), *Fascismo*, Enciclopedia Italiana, vol. XIV, Istituto dell'Enciclopedia Italiana, Roma.

Napolitano G. (1936), *Il tramonto del colonialismo*, Critica fascista, 15, 225-226.

Panunzio S. (1935), *Un capolavoro sbagliato: la Società delle Nazioni*, Critica fascista, 3, 35-37.

Pasetti M. (2016), *Un "colonialismo corporativo"? L'imperialismo fascista tra progetti e realtà*, Storicamente. Laboratorio di Storia, 12, 1-30.

Petri R. (2002), *Storia economica d'Italia*, Il Mulino, Bologna.

Rasi G. (1983b)*, I contenuti della politica economica detta dell'«autarchia»*, Annali dell'economia italiana, 8(I), 126-131, Ipsoa, Milano.

Rasi G. (1983a), *La politica del commercio con l'estero*, Annali dell'economia italiana, 9(I), 158-163, Ipsoa, Milano.

Rochat G. (1971), *Militari e politici nella preparazione della campagna d'Etiopia. Studio e documenti*, Franco Angeli, Milano.

Rumi G. (1974), *L'imperialismo fascista*, Mursia, Milano.

Susmel E., Susmel D. (1951-1963), (eds), *Opera Omnia di Benito Mussolini*, vol. XVI, La Fenice, Florence.

Torchiani F. (2009), *Il fascismo e l'idea di Roma: note sulla recente storiografia*, Il Politico, 1, 201-216.

Usoni L. (1952), *Risorse minerarie dell'Africa Orientale. Eritrea - Etiopia - Somalia*, Ministero dell'Africa Italiana, pp. 511-515, Roma.

Vito F. (1938), *L'economia coloniale nel quadro dell'autarchia*, Rassegna economica dell'Africa italiana, 6, 857-868.

Vito F. (1943), *Ragioni politiche e motivi economici dell'autarchia*, Rassegna Corporativa, 1, 1-11.

Zaccaria M. (2005)*, L'oro dell'Eritrea, 1897-1914*, Africa: Rivista trimestrale di studi e documentazione dell'Istituto italiano per l'Africa e l'Oriente, 1, 65-110.

Zuccoli G. (1939), *Autarchie monetarie e monete imperiali*, Giornale degli economisti e Annali di Economia, 5-6, 399-423.

Muhammad Adnan Khan[*], Michele Borgia[†]

TOTAL QUALITY MANAGEMENT IMPLEMENTATION IN HIGHER EDUCATION SETTINGS. A SYSEMATIC REVIEW

Received: 20 Avril 2021 / Accepted: 29 December 2022

Abstract

The present study was conducted to identify a new set of total quality management practices used in higher education institutions. To achieve this goal, a systematic literature review was performed. The research strategy was applied to studies published between 2000 and 2020, and 40 papers were selected through screening and review based on the purposes of this paper. Six Total Quality Management practices were identified for implementation in higher education institutions, i.e., top management, human resources, customer focus, benchmarking, continuous improvement and process management.

JEL CLASSIFICATION: I20

KEYWORDS: TOTAL QUALITY MANAGEMENT; SOFT TOTAL QUALITY MANAGEMENT PRACTICES; HARD TOTAL QUALITY MANAGEMENT PRACTICES; HIGHER EDUCATION; SYSTEMATIC LITERATURE REVIEW

[*] Department of Management Sciences, Barani Institute of Sciences, Sahiwal, adnan.khan1987@msn.com.
[†] University "G. D'Annunzio" of Chieti Pescara; *E-Mail address*: s.borgia@unich.it.

1. Introduction

Higher education is crucial to the development of nations. Advances in teaching methodologies, new learning tools, and attention to training outcomes have led higher education practitioners to aspire to increasingly competitive standards (Wilkins, 2020; Gulden, Saltanat et al., 2020; Kigozi, 2019), The COVID-19 pandemic has shifted higher education from campuses to online classes, highlighting the need for quality education (Rashid & Yadav, 2020), Tasopoulou and Tsiotras (2017) shed light on how educational quality and administration are very important for all students, parents and society. Yusr, Mokhtar et al. (2017) suggested that the implementation of Total Quality Management (TQM) is important in this regard, and Al-Qayoudhi, Hussaini et al. (2017) stated that TQM is not limited to the manufacturing sector but has also served higher education in recent times. Furthermore, it is clarified that there is sufficient support from the literature for acceptance of TQM in the service sector, i.e., higher education (Thakkar, Deshmukh et al., 2006; Bayraktar, Tatoglu et al., 2008), and Bouranta (2020) explains that by adopting TQM practices, performance pressures on the higher education sector ease, and the quality of education also improves with its implementation (Dwaikat,2020), Kigozi and On (2019) found that a failure to implement TQM by higher education institutions reduces chances of growth and sacrifices benefits from keeping pace with current trends. Moreover, Prakash (2018) has uncovered that the operationalization of quality in higher education is adopted through multidimensional, multilevel and dynamic approaches.

The aim of the present study is to identify a set of TQM practices that is useful and applied in higher education institutions to improve the quality of teaching and administration. These practices are therefore termed a new set of TQM practices used in the higher education setting. Furthermore, this research seeks to explain how the implementation of a new set of TQM practices could enhance performance by improving the quality of education and administration. In addition, to the best of the authors' knowledge, there has been no systematic literature review of this research that provides a roadmap for academicians and practitioners.

With respect to the above, the remainder of this paper is organized as follows. The applied methodology is explained in the next section. The results

of the systematic literature review follow, while the paper ends with a discussion and conclusion, in which the theoretical and practical contributions of the present study are highlighted.

2. Methodology

The aim of this work is to identify a new set of TQM practices used in higher education that could be relevant for all stakeholders in the implementation of these practices. To achieve this goal, a systematic literature review was performed in accordance with frameworks proposed by the main literature on systematic review methodology (Cerchione & Esposito, 2016; Jesson et al., 2011; Ward et al., 2019), Hence, the literature review involved the following main steps:

- search strategy definition;
- selection of studies to be included in the review;
- data extraction;
- recording of results.

Studies were selected using the Emerald Full-text and Science Direct databases. Moreover, to avoidance, the Google Scholar and Scopus search engines were used to search for and select papers. The authors conducted a comprehensive search strategy to find appropriate research papers for the study by using the following keywords: "TQM strategy", "quality management", higher education guidelines", "universities", "Higher education institutions", "TQM concepts", "TQM practices", "Quality systems in higher education", and "TQM implementation in universities". The results were further narrowed down with the keywords "education", "Higher education", "TQM"", and "QM".

3. Results

Al-omoush, Rahahleh et al. (2015) found that higher education is very important to the progress of any nation, as it generates a great capacity to address future challenges and makes the most of opportunities available to any country. Moreover, the authors emphasize that total quality management should focus on human resources, which include students and staff, to obtain

maximum output. In addition, award systems should be established to implement proper practices of TQM.

Sayeda, Rajendran et al. (2010) noted that different TQM practices have a positive relationship with institutional performance. In addition, the authors developed the construct of TQM for engineering educational institutes to evaluate the impact of TQM practices on institutional performance. Finally, the practices that help management implement quality initiatives are also explained by the researchers. Almurshidee (2017) explain that TQM used in higher education institutes in Saudi Arabia has different aspects and find that the staff of higher education institutes view the implementation of TQM as only possible when provided with its constituents. Moreover, teaching staff believe that for the implementation of TQM, it is necessary to provide the required information systems. In addition, it has been noted that TQM implementation is important for performance in higher education institutes in Saudi Arabia. Khan, Malik et al. (2019) report that multiple TQM practices help institutes achieve quality in all departments. The authors also describe the specific TQM practices that contribute more to attaining quality with the maximum performance of employees and institutes.

Two relevant aspects are soft and hard quality management practices. In past research, it has been declared that both aspects are important for quality system implementation; however, research also reports that soft quality management practices are more important in this particular context (Yusr, Mokhtar et al., 2017), Venkatraman (2007) argued that most research has denied the idea of implementing TQM in higher education, as it is difficult to evaluate, although other researchers have found TQM very valuable for higher education. In this study, the researcher proposes a framework that can be used in a higher education context for the implementation of TQM practices to attain quality in the sector. Psomas and Antony (2017) identify TQM elements that improve the performance of higher education institutes in Greece and conclude that sufficient human resources are most important not only for such institutes but for Greek society as a whole. Therefore, it is important that TQM practices emphasize human resources to achieve better performance. Zwain, Lim et al. (2017) explain that the implementation of core TQM practices is important for the performance of institutes. The authors find that academic leadership is necessary not only for the knowledge management process but also for the performance of institutes in Iraq. Santarisi and Tarazi (2008) explain that TQM practices are important for the performance of institutes, both financially and operationally. Consequently, the implementation of TQM

practices helps institutes achieve strong performance efficiently and effectively.

Ahmed, Ali et al. (2016) explain that implementing TQM practices is a new aspect of the higher education sector in Pakistan. Moreover, the authors discuss eight TQM practices that can enhance the performance of institutes. Mohammed, Alotibie et al. (2016) note that Saudi universities have started to emphasize the implementation of TQM practices. As quality is considered important for better performance, it is being considered to improve higher education in Saudi Arabia. Bayraktar, Tatoglu et al. (2008) develop an instrument and explain TQM practices that are critical for the performance of higher education institutes. The authors' instrument has been properly validated to obtain better results of TQM practices in higher education institutes in Turkey. Burli, Bagodi et al. (2012) find that the soft practices of TQM generate better results. Additionally, the authors explain that proper processes and continuous improvement are required for institutes to use TQM practices for better performance.

Dawabsheh, Hussein et al. (2019) observe a positive relationship between TQM practices and the performance of Arab American University Palestine. In addition, employee satisfaction and empowerment, training and development in teamwork with organizational culture are essential for the performance of universities. Antunes, Mucharreira et al. (2018) explain that a customer-oriented focus, continuous improvement, and human resource satisfaction are important because they facilitate the implementation of TQM practices in the Portugal higher education sector. Zubair (2013) shows that the private sector is more vigilant in the implementation of TQM practices than public sector institutes. Others explain reasons for not implementing TQM practices. Rodriguez, Valenzuela et al. (2018) note that customer orientation, leadership, continuous improvement, stakeholder satisfaction and human resource satisfaction are important for improved institute performance. In addition, the authors find that the implementation of these aspects can enhance the higher education sector in the Philippines. Sahu, Shrivastava et al. (2013) reveal that due to intense pressures from all stakeholders, it is necessary to maintain a quality system of technical education to compete in the global market. In addition, the satisfaction of customers, employees and all other relevant stakeholders is necessary to ensure the timely implementation of quality systems along and achieve quality from the technical education sector.

The researchers explain quality issues but not in a collective manner. Thus, findings regarding TQM factors will contribute to the improved performance of technical education. In this study, the researchers used ISO standards and created their own models based on guidelines provided by experts on quality.

Researchers have mentioned that quality management systems should be fully supported by motivated top management commitment along with continuous improvements. In addition, when researchers use ISO-9001:200, further explanation is unnecessary. Moreover, administrative roles are very important in the implementation of standards of quality in an institute (Ruzevicius, Adomaitiene et al., 2007), Dwaikat (2020) collected data from 377 professionals working in university upper management, researchers and other experts. The author found that higher education institutes can benefit from such research, which will contribute to TQM in higher education institutes by explaining the relationships among different variables to assess the performance of the higher education sector. Moreover, such work will help decision-makers select the most appropriate quality factor for increasing the performance of the higher education sector. Prakash (2018) found that different aspects of total quality management have dominated the literature on the higher education sector, but the author finds the satisfaction of students to be the most important factor. In addition, there are different views of quality, as parents, faculty and students think differently about the effect of the efficient implementation of total quality management systems in the higher education sector. It is also noted that the quality of teaching delivery should be maintained at the highest levels to achieve success for the higher education sector with an emphasis on social aims such as equity and access to education. Houston (2008) explained that rather than removing complex systems, there is a need to implement quality systems in the higher education sector. Different indicators regarding the implementation of quality management systems are provided by the researcher. In addition, importance is given to processes and their outcomes for performance. It is also found that local solutions for the implementation of quality systems should be emphasized. Sahney (2012) has given importance to the idea that quality management systems should be adopted by institutes and systems for the effective and efficient performance of higher education institutes. The author explains that customer, faculty and other stakeholder satisfaction is very important for the achievement of performance. In addition, the designs and components identified are necessary for the implementation of quality systems. Ardi, Hidayatno et al. (2012) explain that different quality dimensions are necessary

for the implementation of quality systems in higher education. The study uses an instrument of use to policy-makers by explaining different dimensions that are helpful for the implementation of total quality management for the higher education sector. However, the study only collects data for final-year students and thus does not represent all students, and it will be important to collect data from other students to obtain further results regarding higher education performance.

O'Mahony and Garavan (2012) noted that for the implementation of quality management systems, it is necessary that all aspects be thoroughly monitored. For this purpose, improvement, top management commitment, and utilization of resources are necessary. By implementing the factors identified by the researchers, higher education institutes can easily implement quality management systems. The study was conducted in India, a developing country in regard to engineering institutes, to determine the impact of top management commitment on the achievement of not only customer, employee and other stakeholder satisfaction but also performance in higher education. In addition, the study shows that quality management systems are not fully implemented in institutes for better performance but rather only adopted partially. It is important for a country such as India to care about these factors. Moving forward, it is also recommended that appropriate staff are hired for different jobs (Sakthivel, 2007),

Thakkar, Deshmukh et al. (2006) concluded that for quality improvements in technical institutes to occur, it is very important to provide infrastructure with the best facilities. This encourages not only students but also all other stakeholders to create a quality environment. Moreover, it recommended that institutes always make keen efforts to ensure the proper implementation of continuous improvements, cultural changes and, most importantly, the effective and efficient use of financial resources for better institute performance. Megnounif, Kherbouche et al. (2013) concluded that the development of quality plans is important in the higher education sector to provide guidelines from training to the implementation of quality systems. For this study, data were collected from teachers and students. Therefore, there is a need to improve plans for the implementation of quality systems in higher education. Karahan, Mete et al. (2014) found that it is important to provide quality system implementation for effective and efficient performance in higher education. It is concluded that student satisfaction is as vital as gaining

a competitive advantage for any organization. Moreover, it is evident that quality should be maximized to the benefit of all stakeholders. Rezeanu (2011) describes different quality policies, including "Entropically policies, stimulative policies, [and] comprehension policies". Such policies play an active role in training from upper to lower management for the effective implementation of total quality systems in higher education.

Almsafir, Bourini et al. (2012) conclude that it is essential for private higher education institutes in Malaysia to be accredited by a world-renowned accreditation body, as this enhances awareness of total quality management systems that is necessary for the performance of the higher education sector. Their study of three private institutes found that staff are not fully informed of the importance of accreditations. Todorut (2013) explains that the implementation of total quality management practices enhances higher education competitiveness with others in the market. In addition, quality management practices emphasize innovation and flexibility for improved financial performance and also allows better planning on the part of top management for the implementation of quality in higher education, allowing top management to easily satisfy all stakeholders. Adina-Petruţa, Roxana et al. (2014) concluded that the six sigma strategy can maintain quality systems in higher education. It is further explained that the strategy has already been used in different sectors and has generated effective and efficient results in terms of performance, and its implementation in higher education will also enhance the performance of the higher education sector. In addition, the compatibility of the six sigma approach with ISO 9000 standards is found to improve the performance of the higher education sector. Glushak, Katkow et al. (2015) conclude that economic quality management is essential for independent quality systems of a university, covering all arears that are essential in maintaining quality in universities. Moreover, quality levels have increased through the proper and effective utilization of management controls. Thus, it is noted that it is essential to use economic quality management in an effective way to satisfy all stakeholders.

Bahari, Samsudin, et al. (2019) explore TQM practices as instruments for higher education institutes and show that quality is essential for the achievement of a competitive advantage for higher education institutes. Moreover, it is concluded that the best instrument for measuring the performance of higher education uses different strategies, functions and integrated operations. Kaur and Batra (2019) found that it is essential that students be satisfied with the implementation of TQM practices and elaborate

that teamwork is important for the implementation of TQM practices. Moreover, male and female students think differently about TQM, where male students want stronger implementation of TQM practices than female students.

Horban, Kuprii et al. (2020) observed that Ukraine has received international exposure in implementing TQM practices. In addition, 659 higher education institutes are in the process of increasingly implementing TQM practices following international standards, enhancing the chances of Ukraine's higher education institutes shaping traditions and values for effective performance in higher education. Haque and Tausif (2020) discuss TQM elements that are necessary for improvements in the higher education sector. Three elements, teaching, nonteaching and students, are found to be important for the implementation of quality systems in higher education. In addition, student satisfaction is found to be the most essential element in Saudi Arabia. Baitanayeva, Aubakirova et al. (2020) explain that quality is important in any sector, as it is important for higher education. For a sustainable competitive advantage in both domestic and international markets, it is essential to implement quality systems. Therefore, in Kazakhstan, it is now becoming the priority of universities to ensure that quality systems are implemented in their true spirit.

Martínez-Gómez, Jabaloyes Vivas et al. (2020) explain that TQM practices do not have an strong impact on the higher education sector until they are fully backed by training programs. Moreover, to achieve competitiveness in the market, it is essential that TQM practices be implemented for the growth and performance of higher education. In addition, TQM practices are important to give graduates a bird's eye view of practical life and give them adequate skills to cope with the challenges ahead. Therefore, TQM practices, knowledge management and training are necessary for the implementation of quality programs. The main findings of the above systematic review of the literature are summarized in Table 1.

Table 1. Systematic review of main findings.

Author(s)	Research Country	Title	Findings
Al-omoush, Rahahleh et al. (2015)	Jordan	Total Quality Management in Higher Education	The findings of this study indicate that TQM is an important strategy and it should focus on improving excellence among students, faculty and staff with award systems led by the management of universities.
Sayeda, Rajendran et al. (2010)	India	An empirical study of total quality management in engineering educational institutions of India.	The authors describe TQM practices related institutional performance and report a positive relationship between TQM and performance.
Almurshidee (2017)	Saudi Arabia	The Implementation of TQM in Higher Education Institutions in Saudi Arabia: Marketing Prospective	The results indicate that there should be serious efforts to promote a culture of TQM through different mediums that can help all stakeholders achieve quality standards.
Khan, Malik et al. (2019)	Pakistan	Total Quality Management practices and work-related outcomes. A case study of higher education institutions in Pakistan	The authors observe that TQM practices contribute to employee performance and improve the performance of institutes.
Venkatraman (2007)	New Zealand	A framework for implementing TQM in higher education programs	The research concludes that a systematic evaluation process flow with proper guidelines is necessary for the efficient execution of TQM practices in higher education, as this sector differs from other sectors.

Psomas and Antony (2017)	Greek	Total quality management elements and results in higher education institutions	The study explains that TQM practices are important for the performance of higher education institutes in Greece. In addition, teaching and employee satisfaction have positive impacts on the performance of institutes as well on society.
Zwain, Lim et al. (2017)	Iraq	TQM and academic performance in Iraqi HEIs: associations and mediating effect of KM	The researchers report that core TQM practices have positive impacts on the performance of institutes and knowledge management processes.
Santarisi and Tarazi (2008)	Jordan	The Effect of TQM Practices on Higher Education Performance: The Faculty of Engineering and Technology at the University of Jordan as a Case Study	The study shows that TQM adoption is necessary but that the perceptions of human resources must be considered, i.e., faculty and staff. Moreover, when leaders, students and stakeholders have positive impacts on operations, performance and market focus, this has positive impacts on the financial performance of institutes in Jordan.
Ahmed, Ali et al. (2016)	Pakistan	Implementing TQM practices in Pakistani Higher Education Institutions	The researchers note that the implementation of TQM practices in higher education institutes in Pakistan is still in early stages but can enhance the performance of quality systems.
Mohammed, Alotibie et al. (2016)	Saudi Arabia	Total Quality Management in Saudi Higher Education	The researchers observe that quality is achieved by adopting a continuous process carried out for long period and that the six-sigma method should be implemented to achieve effectiveness and efficiency.
Bayrakta, Tatoglu et al. (2008)	Turkey	An instrument for measuring the critical factors of TQM in Turkish higher education	In this study, the researchers develop an instrument that can be used for the implementation of TQM practices in higher education institutes.

Burli, Bagodi et al. 2012	India	TQM dimensions and their interrelationships in ISO certified engineering institutes of India	The researchers explain that different TQM practices are important for the performance of institutes but that top management is more important for quality systems and the achievement of strong performance in institutes.
Dawabsheh, Hussein et al. (2019)	Palestine	The triangular relationship between TQM, organizational excellence and organizational performance: A case of Arab American University Palestine	The study shows that TQM practices encourage strong performance in organizations and higher education institutes. Moreover, for the implementation of TQM practices, a good organizational culture is important.
Antunes, Mucharreira et al. (2018)	Portugal	Total Quality Management Implementation in Portuguese Higher Education Institutions	The researchers find that TQM practices are important for higher education in Portugal as thy create a global competitive edge. Culture is also important when making efforts to create quality systems.
Zubair (2013)	Pakistan	Total Quality Management in Public Sector Higher Education Institutions	The researcher elaborates that the private sector is more active in the implementation of TQM practices for the better, effective and efficient performance of institutes.
Rodriguez, Valenzuela et al. (2018)	Philippines	TQM paradigm for higher education in the Philippines	The researchers highlight that TQM practices such as the empowerment of human resources, continuous improvement and leadership with stakeholder satisfaction are essential for the performance of institutes.
Sahu, Shrivastava et al. (2013)	India	Critical success factors for sustainable improvement in technical education excellence: A literature review	For the effective and efficient implementation of TQM in technical institutes, it is necessary to adopt TQM in ways tailored to the education sector rather than based on its adoption in the manufacturing sector.

Ruzeviciu s, Adomaiti ene et al., (2007)	Lithuania	Peculiarities of Education Quality Assurance in Lithuania	Quality management systems (QMSs) are now necessary for the progress of any organization and the education sector. It is been observed that such procedure should be adopted to improve performance.
Dwaikat (2020)	Sweden	A comprehensive model for assessing the quality in higher education institutions	Through the adoption of input-based factors, the quality of students impacts the institute environment. Moreover, process-based factors have less of an impact than input-based factors.
Prakash (2018)	India	Quality in higher education institutions: insights from the literature	The findings of the study indicate that total quality management is applied with the help of benchmarking and accountability to suit the higher education sector in the studied region. A model adopted in Europe for the implementation of TQM was later adopted North America and Asia.
Houston (2008)	New Zealand	Rethinking quality and improvement in higher education	The researcher identifies a need for quality improvements to ensure the effective and efficient performance of the higher education sector.
Sahney (2012)	India	Designing quality for the higher educational system	The researcher explains the components necessary for quality in higher education institutes. Moreover, different stakeholders are identified as key to quality implementation systems in the higher education sector.
Ardi, Hidayatno et al.(2012)	Indonesia	Investigating relationships among quality dimensions in higher education	The study finds a relationship between student satisfaction and faculty commitment by measuring student satisfaction at an Indonesian state university, which can guide policy-makers in their future decisions.
O'Mahon y and Garavan (2012)	Ireland	Implementing a quality management framework in a higher education organization	The study identifies factors needed for the implementation of quality management systems in higher education.

Sakthivel (2007)	India	Top management commitment and overall engineering education excellence	The researcher notes that through effective and efficient top management commitment, it is easy to implement total quality management in institutes for quality performance.
Thakkar, Deshmukh et al. (2006)	India	Total quality management (TQM) in self-financed technical institutions	It is found that for the implementation of quality management systems in technical institutes, it is necessary to develop proper infrastructure to compete in the market.
Megnounif, Kherbouche et al. (2013)	Algeria	Contribution to the Quality Assessment in Higher Education: The Case Study of the Faculty of Technology, Tlemcen, Algeria	The researchers explain the importance of continuous improvements to the implementation of quality management systems in higher education. Some of the described methods are also used by the researchers.
Karahan, Mete et al. (2014)	Turkey	Examination of total quality management practices in higher education in the context of quality sufficiency	The study analyses student satisfaction using an adequate scale.
Rezeanu (2011)	Romania	The implementation of quality management in higher education	Different approaches and policies for the implementation of quality systems in organizations are described.
Almsafir, Bourini et al. (2012)	Malaysia	The Global Drivers of Awareness toward TQM Practices within Educational Field: Evidence from Malaysia	The researchers observe the importance of quality management systems in higher education as well the need for accreditation in the implementation of quality management systems.
Todorut (2013)	Romania	The need of Total Quality Management in higher education	The study examines the process and effectiveness of total quality management practice implementation in higher education.

Adina-Petruţa, Roxana et al. (2014)	Romania	Integrating Six Sigma with Quality Management Systems for The Development and Continuous Improvement of Higher Education Institutions	The researchers elucidate the importance and advantages of adopting six sigma and ISO 9000 standards of quality in higher education. These are found to enhance the performance of higher education through proper development of and continuous improvements to quality systems.
Glushak, Katkow et al. (2015)	Russia	Contemporary Economic Aspects of Education Quality Management at the University	It is found that economic quality management is essential for sustainable quality systems in higher education.
Bahari, Samsudin, et al. (2019)	Malaysia	A Proposed Measurement Instruments for Total Quality Management Practices in Higher Education Institutions	The researchers describe TQM practices and measurement instruments for higher education institutes and different challenges faced by higher education institutes in implementing quality systems.
Kaur and Batra (2019)	India	Evaluating Students Perception Regarding Prevailing Practices of TQM in Management Institutions of Punjab	The researchers identify different TQM practices of Indian higher education in the Punjab region for the sustainable implementation of quality systems.
Horban, Kuprii et al. (2020)	Ukraine	Implications of total quality management in Ukrainian higher education institutions: international experience	The researchers clarify that education is important for the development of any nation and describe TQM implementation with a focus on Ukrainian higher education institutions.

Haque and Tausif (2020)	Saudi Arabia	Managing quality in university framework: Students' perspective	It is identified that in Saudi Arabia, all sectors are rapidly developing based on government goals, and thus the education sector must keep pace with such development, which quality systems can help with.
Baitanayeva, Aubakirova et al. (2020)	Kazakhstan	Problems of improving the quality of education	The study describes quality problems facing higher education and solutions based on comparisons of international standards.
Martínez-Gómez, Jabaloyes Vivas et al. (2020)	Spain	Relevance of Skills in Total Quality Management in Engineering Studies as a Tool for Performing Their Jobs	The researchers conclude that for the Spanish higher education sector, it is necessary to maintain quality higher education based on European standards.

Source: Own elaboration.

4. Discussion

Different findings were obtained from an in-depth study of 39 selected research publications based on various sample types, geographic areas, and study approaches, as shown in Table 1. Moreover, six TQM practices were identified as a new set of TQM practices for higher education institutes from a review of the literature, i.e., top management (39), human resources (38), customer orientation (33), benchmarking (05), process management (26), and continuous improvement (29), The following section further explains each TQM practice.

Top Management

Committed and involved top management makes decisions and develops defined visions for the successful implementation of TQM practices in higher education institutes (Narne & Sreenivas, 2017), In addition, Venkartaman (2017) observed that top management attention is necessary for day-to-day operations along with the compilation of strategies to compete in the market and the resolution of matters and issues of faculty members to boost their morale. Therefore, the role of top management is important to provide guidelines, vision, missions, processes and directions for the maximum productivity and prosperity of human and nonhuman resources in higher education institutes (Spendlove, 2007: McGoey, 2007), However, honesty and

adaptation to change from top management are vital for the progression of higher educational institutes (Drew, 2006; Bryman, 2007),

Human Resources

The successful implementation of TQM practices in higher education institutes is possible by evolving the process of human resources and providing opportunities according to their calibre for the prosperity of both institutes and human resources. Unfortunately, human resource offices are not able to provide guidance in this regard and create a pessimistic approach to human resources (Allui & Sahni, 2016; Mallillin, 2017), In higher education institutes, faculty are important for the implementation of TQM practices, but proper training, promotion and incentives can enhance motivation, though, as reported in past research, these factors are neglected and create barriers to implementation (Quraishi, Hussain et al., 2010), In addition, competent human resources contribute to the achievement of quality in higher education institutes (Chao, Hsu, et al., 2017),

Customer Focus

Student satisfaction creates word of mouth, and quality aspects are evaluated as a result. Therefore, the implementation of TQM practices and student satisfaction increase the goodwill of institutes (Teeroovengadum, Nunkoo et al., 2019), Furthermore, it is the right of the students to be satisfied, as observed by Jager and Jan (2019), and providing satisfaction along with quality has a positive impact on the performance of institutes. In addition, staff members have always been important to the satisfaction of students (Singal, Garg et al., 2016), and a study conducted in Pakistan concluded that the satisfaction of students is vital to the successful implementation of TQM practices and the performance of institutes.

Benchmarking

Benchmarking plays an important role in contributing to the development of organizational learning at an institute. In addition, a ministry of education should try to effectively guide institutes to prosperity and achieving total quality management (Rübenich, Dorion et al., 2019), Educational programs for the digital economy have an effect due to benchmarking, but proper training for both students and teachers is required to determine the priorities of today's world and adjust to global competition (Azoev, Aleshnikova et al., 2019), In addition, Mehta, Diwakar et al. (2019) note that infrastructural facilities should improve to achieve benchmarking in the higher education

sector, and Raja, Iftikhar et al. (2019) explain that benchmarking contributes to accreditation from the world's top accreditation bodies.

Process Management

Fernandes and Fernandes (2018) found that process management has an impact on the quality and performance of higher education institutes. In addition, Hrabala, Opletalová et al. (2017) conclude that institutes implementing process management secure better results than those still in the brainstorming phase. Moreover, Nadarajah and Kadir (2016) report that process management should be implemented in higher education institutes to achieve effective performance.

Continuous Improvement

As explained by Kregel (2019), continuous improvements are viewed positively by students, who provide good feedback about them. Innovation in teaching with the introduction of new learning techniques, ideas and practical demonstrations has a positive impact on students as a part of continuous improvement programs initiated by institutes. Carlucci, Renna et al. (2019) observed that feedback has not been taken seriously by institutes, but with the implementation of continuous improvement programs, institutes are considering feedback to ensure effective performance. In addition, Iyer (2018) explains that continuous improvement is an important factor in the implementation of TQM practices in institutes to obtain maximum performance and quality for the enhanced learning of students. These latest findings are summarized in Table 2 below.

Table 2. TQM practices in Higher Education Settings.

Author(s)	TQM practices					
	TP	**HR**	**CF**	**PM**	**CI**	**BM**
Al-omoush, Rahahleh et al. (2015)	√	√	√		√	
Sayeda, Rajendran et al. (2010)	√	√	√		√	√
Almurshidee (2017)	√	√				
Khan, Malik et al. (2019)	√	√				
Yusr, Mokhtar et al. (2017)	√	√	√	√	√	
Venkatraman (2007)	√	√	√			

Psomas and Antony (2017)	√	√	√	√	√	
Zwain, Lim et al. (2017)	√	√	√	√	√	
Santarisi and Tarazi (2008)	√	√	√	√		
Ahmed, Ali et al. (2016)	√		√	√	√	
Mohammed, Alotibie et al. (2016)	√	√	√		√	
Bayraktar, Tatoglu et al. (2008)	√	√	√	√	√	
Burli, Bagodi et al. 2012	√	√	√		√	
Dawabsheh, Hussein et al. (2019)	√	√	√	√		
Antunes, Mucharreira et al. (2018)			√		√	
Zubair (2013)	√	√	√	√	√	
Rodriguez, Valenzuela et al. 2018	√	√	√	√		
Sahu, Shrivastava et al. (2013)	√	√	√		√	
Ruzevicius, Adomaitiene et al., (2007)	√	√	√	√	√	√
Dwaikat (2020)	√	√	√	√	√	
Prakash (2018)	√	√		√	√	
Houston (2008)	√	√	√		√	
Sahney (2012)	√	√		√	√	
Ardi, Hidayatno et al. (2012)	√	√			√	
O'Mahony and Garavan (2012)	√	√		√		√
Sakthivel (2007)	√	√	√	√	√	√
Thakkar, Deshmukh et al. (2006)	√	√		√		
Megnounif, Kherbouche et al. (2013)	√	√	√	√	√	

Karahan, Mete et al. (2014)	√	√	√		√	
Rezeanu (2011)	√	√	√	√	√	
Almsafir, Bourini et al. (2012)	√	√	√	√	√	
Todorut (2013)	√	√	√	√	√	
Adina-Petruţa, Roxana et al. (2014)	√	√	√		√	
Glushak, Katkow et al. (2015)	√	√	√	√	√	
Bahari, Samsudin, et al. (2019)	√	√	√	√		
Kaur and Batra (2019)	√	√	√		√	
Horban, Kuprii et al. (2020)	√	√	√	√		
Haque and Tausif (2020)	√	√	√	√	√	
Baitanayeva, Aubakirova et al. (2020)	√	√	√	√		
Martínez-Gómez, Jabaloyes Vivas et al. (2020)	√	√	√	√	√	√
Total	**39**	**38**	**33**	**26**	**29**	**05**

TP= top management; HR= human resource; CF= customer focus; PM= process management; CI= continuous improvement; BM= benchmarking.

Source: Own elaboration.

5. Conclusions

From this systematic literature review, six important TQM practices emerged, namely, top management, human resources, customer orientation, benchmarking, process management and continuous improvement. These six practices were found to be crucial for the successful implementation of TQM in the higher education sector. However, the results of the study differ from those of the studies used to find TQM practices. This may be due to methodology or measurement outcome differences. When analysing these differences, it was concluded that cross-sectional case studies and exploratory studies with different sample sizes and types were analysed. Multiple studies have been conducted in different parts of the world with different results. In

addition, various outcome measures have been used, such as the "Malcom Baldrige National Quality award", "Six Sigma" approach, "European Foundation of Quality Management" approach, "Kanji business excellence model" and "Balance scorecard approach", resulting in different outcome measures for the implementation of total quality management practices in higher education. Furthermore, top management is identified as important by researchers in the implementation of TQM practices in higher education institutions. Similarly, human resources, customer orientation, benchmarking, continuous improvement and process management are well supported by many researchers as important in the implementation of total quality management practices in higher education institutions. Thus, it is concluded that these six practices are critical in the implementation of successful TQM practices.

5.1 Managerial implications

Managerial suggestions for the successful implementation of TQM practices in higher education institutions are as follows:

- TQM practices can be used to satisfy students, improve quality learning and contribute to the performance of higher education institutions.
- There is a need to focus on benchmarking and human resources to improve the performance of higher education institutions.
- Finally, there is a need to introduce to all internal and external stakeholders the importance of implementing TQM practices in higher education institutions.

5.2 Recommendations for future research

The present study could be further extended to examine barriers to the implementation of TQM practices in developing countries' higher education institutions. Furthermore, research should be conducted on TQM practices from the student's point of view. Finally, the results of the present study could help policy-makers and practitioners adopt the successful implementation of

TQM practices in higher education institutions and contribute to knowledge of TQM philosophy.

References

Adina-Petruţa P., Roxana S. (2014), *Integrating six sigma with quality management systems for the development and continuous improvement of higher education institutions*, Procedia-Social and Behavioral Sciences, 143, 643-648.

Ahmed R., Ali S.I. (2016), *Implementing TQM practices in Pakistani higher education institutions*, Pakistan Journal of Engineering, Technology & Science, 2(1), 1-26.

Almsafir M.K., Bourini I.F. (2012), *The global drivers of awareness toward TQM practices within educational field: evidence from Malaysia*, Procedia-Social and Behavioral Sciences, 62, 1245-1254.

Al-Omoush M.M., Alrahahleh A.H., Alabaddi Z.A. (2015), *Total quality management in higher education*, Information and Knowledge Management, 5(12), 49-59.

Almurshidee K.A. (2017), *The implementation of TQM in higher education institutions in Saudi Arabia: Marketing prospective*, Global Journal of Management and Business Research, 17(A1), 1-7.

Antunes M.G., Mucharreira P.R., Justino M.D.R.T., Quirós J.T. (2018), *Total quality management implementation in portuguese higher education institutions,* Multidisciplinary Digital Publishing Institute Proceedings, 2(21), 1342.

Ardi R., Hidayatno A., Zagloel T.Y.M. (2012), *Investigating relationships among quality dimensions in higher education*, Quality Assurance in Education, 20(4), 408-428.

Baitanayeva B., Aubakirova Z., Aitbembetova A., Sansyzbayeva A. (2020), *Problems of improving the quality of education*, E3S Web of Conferences, Vol. 159, 09002, EDP Sciences.

Bayraktar E., Tatoglu E., Zaim S. (2008), *An instrument for measuring the critical factors of TQM in Turkish higher education*, Total Quality Management, 19(6), 551-574.

Burli S., Bagodi V., Kottursheттar B. (2012), *TQM dimensions and their interrelationships in ISO certified engineering institutes of India*, Benchmarking: An International Journal, 19(2), 177-192

Cerchione R., Esposito E. (2016), *A systematic review of supply chain*

knowledge management research: State of the art and research opportunities, International Journal of Production Economics, 182, 276-292.

Dawabsheh M., Hussein A., Jermsittiparsert K. (2019), *The triangular relationship between TQM, organizational excellence and organizational performance: A case of Arab American University Palestine*, Management Science Letters, 9(6), 921-932.

Dwaikat N.Y. (2020), *A comprehensive model for assessing the quality in higher education institutions*, The TQM Journal, 33(4), 841-855.

Feng J., Prajogo D.I., Tan K.C., Sohal A.S. (2006), *The impact of TQM practices on performance: A comparative study between Australian and Singaporean organization*, European Journal of Innovation Management, 9(3), 269-278.

Glushak N., Katkow Y., Glushak O., Katkowa E., Kovaleva N. (2015), *Contemporary economic aspects of education quality management at the university,* Procedia-Social and behavioral sciences, 214, 252-260.

Haque M., Tausif M. (2020), *Managing quality in university framework: Students' perspective,* Management Science Letters, 11(2), 627-636.

Horban O., Kuprii T., Martych R., Panasiuk L. (2020), *Implications of total quality management in Ukrainian higher education institutions: international experience*, Scientific Bulletin of National Mining University, 2, 129-130.

Houston D. (2008), *Rethinking quality and improvement in higher education*, Quality Assurance in Education, 16(1), 61-79.

Jesson J., Matheson L., Lacey F.M. (2011), *Doing your literature review: Traditional and systematic techniques*, Sage, Newcastle upon Tyne.

Karahan M., Mete M. (2014), *Examination of total quality management practices in higher education in the context of quality sufficiency*, Procedia-Social and Behavioral Sciences, 109, 1292-1297.

Khan M.N., Malik S.A., Janjua S.Y. (2019), *Total Quality Management practices and work-related outcomes*, International Journal of Quality & Reliability Management, 36(6)864-874.

Martínez-Gómez M., Jabaloyes Vivas J.M., García A.C. (2020), *Relevance of Skills in Total Quality Management in Engineering Studies as a Tool for Performing Their Jobs*, Sustainability, 12(5), 2065.

Megnounif A., Kherbouche A., Chermitti N. (2013), *Contribution to the quality assessment in higher education: The case study of the faculty of technology, Tlemcen, Algeria*, Procedia-Social and Behavioral Sciences, 102, 276-287.

Mohammed K., Alotibie B.A., Abdulaziz A. (2016), T*otal quality management in Saudi higher education*, International Journal of Computer Applications, 135(4), 6-12.

Nadali Najafabadi H., Sadeghi S., Habibzadeh P. (2008), *Total Quality Management in Higher Education Case Study: Quality in Practice at University College of Borås*.

O'Mahony K., Garavan T.N. (2012), *Implementing a quality management framework in a higher education organisation*, Quality Assurance in Education. 20(2), 184-200.

Prakash G. (2018), *Quality in higher education institutions: insights from the literature*, The TQM Journal, 30(6), 732-748.

Psomas E., Antony J. (2017), *Total quality management elements and results in higher education institutions*, Quality Assurance in Education, 25(2), 206-223.

Rezeanu O.M. (2011), *The implementation of quality management in higher education*, Procedia-Social and Behavioral Sciences, 15, 1046-1050.

Rodriguez J., Valenzuela M., Ayuyao N. (2018), *TQM paradigm for higher education in the Philippines*, Quality assurance in education, 26(1), 101-114.

Ruzevicius J., Adomaitiene R., Serafinas D., Daugviliene D. (2007), *Peculiarities of education quality assurance in Lithuania*, Asian Journal on Quality, 8(2).

Sahu A.R., Shrivastava R.R., Shrivastava R.L. (2013), *Critical success factors for sustainable improvement in technical education excellence*, The TQM journal, 25(1), 62-74.

Prakash G. (2018), *Quality in higher education institutions: insights from the literature*. The TQM Journal.

Sahney S. (2012), *Designing quality for the higher educational system*, Asian Journal on Quality, 13(2), 116-137.

Sakthivel P.B. (2007), *Top management commitment and overall engineering education excellence*, The TQM Magazine, 19(3), 259-273.

Santarisi N.S., Tarazi A.H. (2008), *The Effect of TQM Practices on Higher Education Performance: The Faculty of Engineering and Technology at the University of Jordan as a Case Study*, Dirasat, Engineering Sciences, 35(2), 84-96.

Sayeda B., Rajendran C., Lokachari P.S. (2010), *An empirical study of total quality management in engineering educational institutions of India*, Benchmarking: an international journal, 17(5), 728-767.

Thakkar J., Deshmukh S.G., Shastree A. (2006), *Total quality management (TQM) in self-financed technical institutions*. Quality Assurance in Education.

Todorut A.V. (2013), *The need of total quality management in higher education*, Procedia-Social and Behavioral Sciences, 83, 1105-1110.

Venkatraman S. (2007), *A framework for implementing TQM in higher education programs*, Quality assurance in education, 15(1), 92-112.

Yaakub K., Samsudin N., Jizat J., Yonus A., (2019), *Proposed Measurement Instruments for Total Quality Management Practices in Higher Education Institutions*, Research in World Economy, 10(5), 36-44.

Ward R., Usher-Smith J., Griffin S. (2019), *How to produce a systematic review*, InnovAiT: Education and Inspiration for General Practice, 12(3), 155-157.

Yusr M.M., Mokhtar S.S. M., Othman A.R., Sulaiman Y. (2017), *Does interaction between TQM practices and knowledge management processes enhance the innovation performance?*, International Journal of Quality & Reliability Management, 34(7), 955-974.

Zubair S.S. (2013), *Total quality management in public sector higher education institutions*, Journal of Business & Economics, 5(1), 24-55.

Zwain A.A.A., Lim K.T., Othman S.N. (2017), *TQM and academic performance in Iraqi HEIs: associations and mediating effect of KM*. The TQM Journal, 29(2), 357-368.

Shakil Ahmad* - Zia Ur Rahman†- Sajjad‡

ANALYZES WITH AN INTERESTING GRAVITY MODEL WHAT AFFECTS RELATIONSHIP BETWEEN CHINA AND ITS MAIN TRADING PARTNERS IN THE COTTON TRADE

Received: 16 January 2022 / Accepted: 21 September 2022

Abstract

This study employs the gravity model approach to investigate the factors that affect the relationship between China and its main trading partners in the cotton trade from 2000 to 2017 with a total of 18 selected importing partners. The major objective of this paper is to identify some of the determinants of China's cotton exports to its top 18 trading partners. The empirical estimates reveal that among the control variables in the gravity equation, the exchange rate has a significant positive impact on China's cotton exports, which suggests that cotton exports increase with depreciation in the Chinese Yuan along with the currencies of the partner countries. Tariffs have negative robust effects on Chinese cotton exports, which indicates that a high tariff rate of the partner countries will lower the exports of cotton from China. Furthermore, the traditional variable of distance has a negative effect on Chinese cotton exports, which indicates that the cost of transport depends on the distance; thus, the export of cotton decreases as the distance increases. Finally, an increase in both China's GDP and an importer's GDP along with population has a significant positive effect on China's cotton exports. The results of this study will be helpful to the Chinese government in setting cotton export policies.

JEL CLASSIFICATION: F00; F10; F14; F41; F47

KEYWORDS: COTTON EXPORTS; GRAVITY MODEL; POISSON REGRESSION; AVERAGE MARGINAL EFFECTS; CHINA

* School of International Trade and Economics, University of International Business and Economics (UIBE), Beijing, China; *E-mail address*: ShakilAhmadeco@gmail.com
† School for Southeast Asian Studies, Xiamen University, Fujian P.R China
‡ Assistant Professor of Economics at Higher Education Department, Khyber Pakhtunkhwa

1. Introduction

Rapid economic growth and exports are widely regarded as the most significant and imperative goals of developing countries. Both classical and neoclassical economists have studied foreign trade as the catalyst for an economy's development (Atif, Haiyun, and Mahmood, 2016). The export-led growth hypothesis in particular urges developing economies to increase exports to gain further development (Barro, 1991). Keeping in mind the importance of exports, the factors that determine and explain export flows have been broadly examined and reviewed by both policy-makers and academics. Worldwide, nearly 250 million people are dependent on cotton production and processing for their livelihoods, and a significant number of people work in the cotton industry. It is one of the world's largest fibre and cash crops (Better Cotton GIF, 2017-18). China is an emerging economy, and similar to other economies, China is also witnessing faster economic growth because of the country's latent trade capacity and, in particular, the cotton trade. In some nations, the cotton trade contributes to as much as 40 percent of exports of products and more than 5% of GDP (Baffes, 2005). In several regions, cotton is the backbone of agricultural commodities, supports a broad rural population and supplies significant raw material to the textile industry. In China, cotton is one of the most valuable cash crops relative to other crops. With more than 10 million workers, the Chinese cotton textile industry is the largest sector in the country, while the country's most important export commodities are textiles and garments (UNEP, 2002). The accession of China to the WTO gives the textile industry a favourable opportunity; however, it can have a major effect on cotton production (UNEP, 2002).

India was the largest producer of cotton in the world from 2017-2018, while China was the second-largest cotton producer worldwide. Cotton production was estimated at 27.5 million bales in China in 2017 and 2018, which was 21 percent higher than in the previous year. After almost a decade of decline in the eastern areas where cotton crops are grown, production appears to have stabilized, while higher areas and yields in the Xinjiang region push production to record levels. The cultivated area of China for 2017-2018 was estimated at 3.4 million hectares, which was 500,000 hectares over that for 2016-2017, while the production is projected at 1,761 kg/hectare, which is 3.1% higher than the previous season (Johnson et al., 2018, United States Department of Agriculture [USDA], 2018). Furthermore, the overall area cultivated for cotton crops in 2018-2019 dropped by 3.1 percent to 3.25

million hectares from the estimated 3.35 million hectares in the previous year. The decrease in the overall area planted in 2018-2019 was a consequence of sluggish cotton earnings and higher corn prices in 2017-2018 in some regions where farmers can easily replace corn with cotton (USDA, 2018). Global cotton production in the 2018 marketing year dropped by 3 percent to 25.8 million tons (Mt). In India, China, and the United States, declines in cotton production were observed, while only Brazil increased its output. Pest issues, bad weather, and limited water supply were the main reasons that led to declines in cotton production in 2018. In 2018, global consumption of cotton rose by 2 percent to 27.3 million tons (Mt). China continued to remain the world's largest raw cotton user and accounted for approximately one-third of the total use of spinning mills, followed by India. Cotton exports rose globally from 7 percent to 9.5 Mt or 37 percent of world production (OECD-FAO Agricultural Outlook 2019-2028).

Although China is the world's second-largest cotton producer, China is the third-largest cotton importing country, and it imports 13 percent of the cotton traded globally. Until 2016, China had been the largest trade partner for cotton with the United States; however, in 2016, Vietnam became the largest trading partner for U.S. cotton, and China became the second-largest trading partner (USDA, 2018c). In 2017, the United States exported approximately 16 percent of its cotton to China. Last year, China imported cotton worth approximately $976 million from the U.S., which is the second-highest of all other row crops after soybeans. Considering the overall domestic use of cotton in China, exports of cotton from China are negligible, at approximately 10,000 tons per year (USDA, 2018). Due to high stocks in China, in 2016 and beyond, the country's cotton exports were expected to increase further with the importing countries on the expectation that the Chinese government wants to sell its stock at a price that is more market-oriented (USDA, 2016). The cotton exports hit the highest level in nine years at 28,000 tons in 2015-2016, while in 2016-2017, cotton exports remained at 13,000 tons. According to the USDA post projections, cotton exports amounted to 22,000 tons in 2017-2018 and were further expected to slip to 13,000 tons in 2018-2019 (USDA, 2018).

China's trade flow has attracted some attention from previous researchers such as Dadakas et al. (2020), Kea et al. (2019), Rahman, Shahriar, and Kea (2019), Lateef, Tong, and Riaz (2018), Kabaklarli, Duran, and Ucler (2018), and Monineath (2018). However, no study can be found in the literature that analyses China's bilateral cotton trade with 18 major trading partners by using a gravity model approach. The key purpose of this research is to identify the

determinants of Chinese cotton exports for the period of 2000-2017. This study uses the gravity model for its empirical analysis and verification to determine whether China's bilateral trade can be explained by economic indicators such as GDP, the GDP per capita of reporting and partner countries, distance, exchange rate, population, common border, and free trade agreements (FTAs). To the best of our knowledge, no earlier study in the literature review attempted to identify the determinants of Chinese cotton exports by using the gravity model approach. The goal of this study is to fill the literature gap on the determinants of cotton exports in China that will enable policy-makers to formulate cotton export policies in the country.

2. Literature review

Many researchers have used the gravity model to analyse export determinants for a particular commodity. To analyse the relationship between China and 23 Asia and Pacific countries between 1992 and 2000, Abraham and Van Hove (2005) used a gravity model. Their empirical findings showed that China's regional agreement participation has great export potential and minor impacts on Asia-Pacific exports from ASEAN and APEC. For Xinjiang's bilateral trade, Xuegang et al. (2008) used the three explanatory variables of GDP, GDP per capita, and the Shanghai Cooperation Organization (SCO). Their outcome showed that Xinjing's bilateral trade was influenced by all three variables. Sevela (2002) used a gravity model to examine the relevant determinants for the Czech Republic's agricultural exports. The study concluded that agricultural exports are closely linked to gross national income (GNI) and that distance is harming agricultural exports.

As the world's largest producer and exporter of textile products since 2000, the determinants of Chinese textile exports were studied with data from 1985 to 2004 by Chan and Au (2007). The results indicated that for China's textile exports, the real exchange rate, GDP, FTA membership, per-capita GDP, and importers' population growth are all statistically significant. Geographical distance, in contrast, has no significant effect on the textile trade. The trade flows between China and its major trade partners in Asia, North America, and Europe were also studied by Caporale et al. (2015) by using a panel data approach over the period of 1992 to 2012. The findings of the study confirmed that China's trade structure had changed considerably in connection with rapid external trade growth.

Using the gravity model, Hatab, Romstad, and Huo (2010) investigated the key determinants of Egyptian agricultural exports to its major trading partners by using data for the 1994-2008 period. Their results showed that a one-percent increase in Egypt's GDP results in roughly a 5.42-percent increase in Egypt's agricultural export flows. The exchange rate volatility has a significant positive coefficient, which shows that depreciation in the Egyptian pound against the currencies of its partners stimulates agricultural exports. Distance and transportation costs are found to have a negative influence on agricultural exports.

To explore the driving forces behind China's remarkable export growth, particularly to the United States and Japan, Chen, Rau, and Chiu (2011) used quarterly panel data on 71 industries from 1999 to 2007 to estimate China's exports. For example, an appreciation of Rimini's (RMB) real exchange rate tends to adversely affect Chinese exports to the two countries. However, because of China's higher reliance on Japan's intermediate products, the effect is much greater on Sino-U.S. trade than on Sino-Japanese trade. The study concluded that the empirical evidence also showed that income elasticities and economic growth rate differences could account for China's export growth to the United States more quickly than to Japan.

he determinants of Vietnam's rice exports to Asian and non-Asian nations were examined by Thi and Doan (2013). They used Vietnam's 2010 rice export data and its 124 destination markets. High farm income in importing countries does not inherently contribute to higher exports of rice, although densely populated countries prefer to export higher amounts of rice. In deciding the export trend of firms that operate in one market, value-added agriculture performs better. In particular, distance encourages rice exports in some cases if the destination markets are non-Asian countries, which suggests a high export potential for rice firms. The scholars concluded that the impact of landlocked dummies on heavy bulk products such as rice is much more sensitive to the export volume of rice than to the export value.

The determinants of agricultural exports from Pakistan were examined by Rao, Haiyun, and Mahmood (2016) with the stochastic frontier gravity model by using annual data for the period of 1995 to 2014 and a sample of 63 countries. According to them, the key objective of developed countries is fast economic growth, and exports are considered a motor for economic growth. Their findings showed that both bilateral exchanges and tariff rates also influence exports of agricultural products. The effects of shared boundaries, a common culture, a colonial history, and preferential trade agreements have

also been examined, and the study confirmed the significance of each aspect, except for a common language. The technological efficiency figures indicate that with neighbouring, Middle Eastern, and European countries, Pakistan has great export potential.

Lateef, Tong, and Riaz (2018) estimated the impact of the Free Trade Agreement (CPFTA) on agricultural trade in China and Pakistan by using the Poisson Pseudo Maximum-Likelihood (PPML) technique of the gravity model. They used two-panel datasets of agricultural exports for both countries that contain agricultural exports and other macroeconomic variables for China and Pakistan with 110 partner countries from 2001 to 2014. Their findings showed that the CPFTA has a strong trade-creating impact on agricultural exports and helps to exponentially increase Pakistan's agricultural exports to China. However, for Chinese agriculture exports to Pakistan, the CPFTA was found to be ineffective.

For the period of 1990 to 2017, Rahman, Shahriar, and Kea (2019) used data from 40 trading partners and examined export determinants and the issues that affect Bangladesh's textile and apparel exports. They used the gravity model for their analysis. Their findings showed that GDP, GDP per capita, and real exchange rates tend to be major determinants of Bangladesh's export trade in textiles. The findings also revealed that distance has no strong influence on the textile trade. The study found that the two most important export destinations for Bangladesh clothing are the European Union and North American countries with an FTA with the region.

Given the recent shifts in the structure of the economy and the importance of trade for the United Arab Emirates (UAE) economy, Dadakas, Kor, and Fargher (2020) examined the prospects for the country to further expand trade. To analyse the determinants of trade and trade potential, a gravity equation was used on 2002-2016 panel data and a Poisson pseudo maximum probability estimator. The findings indicated that with some of its main trading partners, including some GCC and PAFTA member countries, the UAE has exhausted its trading potential. However, with many other nations, including Japan and India, there is potential for an expansion of trade, which may dictate future trade policy initiatives. Table 1 provides a summary of the previous empirical studies on the determinants of exports.

Table 1. Previous studies on the determinants of exports

Author (s)	Country (s), Time Periods	Estimator (s)	Response Variable	Regressors	Findings
Hatab, Romstad and Huo (2010)	Egypt 1994-2008	Gravity Model	Agriculture exports	Exchange Rate, Egypt's GDP, Distance	Exchange Rate (+) Egypt's GDP (+) Distance (-)
Atif, Haiyun and Mahmood (2016)	Pakistan 1995-2014	Stochastic Frontier Gravity Model	Agriculture Exports	Exchange Rate, Common Border, Tariff	Exchange Rate (+) Common Border (+) Tariffs (-)
Chan and Au (2007)	China 1985-2004	Gravity Model	Textiles Exports	GDP, Real Exchange Rate, FTA	Real Exchange Rate (+) GDP (+) FTA (+)
Otsuki and Majumdsar (2003)	Industrialized and advanced countries	Gravity Model	Beef Exports	Income, Population, Distance	Income (+) Population (-) Distance (-)
Kabaklarli, Duran and Ucler (2018)	OECD Countries 1989-2015	Panel Cointegration	High-Technology Exports	GDP, FDI	GDP (-) FDI (+)
Bhavan (2016)	Sri Lanka 1980-2013	Johansen cointegration, Vector Error Correction Method (VECM)	Sri Lanka Exports	FDI, Interest Payment on Foreign Debt, Import, Gross Capital Formation, Per Capita Income	FDI (-) Payment on Foreign Debt (-) Import (-) Gross Capital Formation (+) Per Capita Income (+)

Table 1. Previous studies on the determinants of exports (continued)

Author (s)	Country (s), Time Periods	Estimator (s)	Response Variable	Regressors	Findings
Magombo, Edriss and Phiri (2017)	Malawi 2001-2013	Gravity Model	Malawi's Cotton Exports	GDP Per Capita Partner, GDP Per Capita Malawi, Exchange Rate, Distance	GDP Per Capita Partner (-) Per Capita Malawi (+) Exchange Rate (+) Distance (-)
Monineath (2018)	Cambodia 1993-2015	Autoregressive Distributed Lag (ARDL) Model	Cambodia Exports	Inflation, Real Exchange Rate, Trade Liberalization, Official Development Assistance	Inflation (-) Trade Liberalization (+) Official Development Assistance (+)
Chan, E.M.H., KF. In addition, M.K. Sarkar (2008)	India 1985-2005		India's Textile Exports	GDP, Real Exchange Rate	GDP (+) Real Exchange Rate (+)
Huong, Ha, and Lan (2017)	Vietnam 2012-2014	Gravity Model	Vietnamese Textile Exports	Transport Cost, Real Exchange Rate, Distance, Tariffs	Distance (-) Real Exchange Rate (+) Tariffs (-)

3. Data and Methodology

3.1 Data

The sample size of this analysis consists of 18 major cotton-importing countries from China. These 18 countries are considered the major trading partners in terms of cotton imports from China for the period of 2000 to 2017, which is divided into the six intervals of 2000 to 2005, 2006 to 2011, and 2012 to 2017. The data on GDP, the real exchange rate, and tariffs are taken from the World Development Indicators (WDI). The cotton data are obtained from the UN COMTRADE database, distance data (in km) are obtained from the CEPII database, and the common borders are collected from the WTO.

3.2 Econometric methodology

This study uses the gravity model to evaluate the flow of cotton from China to its partner countries. The gravity model, which was originally derived from Newton's physics gravity equation, is widely used by researchers to explain international trade. The trade gravity model and its theoretical dimensions have recently been studied elsewhere (Anderson, 1979; Anderson, 2011; Shahriar et al., 2019; Rahman et al., 2019). Tinbergen (1962), Poyhonen (1963) and Pulliainen (1963) simultaneously developed this model as one of the most successful in formulating and clarifying bilateral trade flows. The basic gravity model explicitly states that trade between two countries is determined positively by the GDP of each country and negatively by the distance between them. The formulation can be generalized as follows:

$$X_{ij} = \beta_0 Y_i^{\beta 1} Y_j^{\beta 2} D_{ij}^{\beta 3} \quad [1]$$

where $\boldsymbol{X_{ij}}$ is the flow of exports between country $\boldsymbol{j}$ and country $\boldsymbol{i}$, $\boldsymbol{Y_{ij}}$ are country $\boldsymbol{i}$ and nation $\boldsymbol{j}$ GDP and D_{ij} **ij** is the distance between the nations' capitals. The linear form of the gravity model is given as follows:

$$\log(X_{ij}) = \alpha + \beta_1 \log(Y_i) + \beta_2 \log(Y_j) + \beta_3 \log(Y_{ij}) \quad [2]$$

The generalized gravity model of trade states that the volume of exports between pairs of countries, $\boldsymbol{X_{ij}}$, is a function of their incomes (GDPs), their populations, their distance, and a set of dummy variables that either facilitate

or restrict trade between pairs of countries, which is given as follows:

$$\boldsymbol{X_{ij} = \beta_0 Y_i^{\beta 1} Y_j^{\beta 2} L_i^{\beta 3} L_j^{\beta 4} D_{ij}^{\beta 5} A_{ij}^{\beta 6} eu^{ij}} \quad [3]$$

where $\boldsymbol{Y_i}$ ($\boldsymbol{Y_j}$) represents the GDP of the nation $\boldsymbol{i}$ ($\boldsymbol{j}$), $\boldsymbol{Li}$($\boldsymbol{Lj}$) is the population of country $\boldsymbol{i}$ ($\boldsymbol{j}$), $\boldsymbol{D_{ij}}$ represents the distance between the two nations' capitals, $\boldsymbol{A_{ij}}$ indicates dummy variables, $\boldsymbol{eu^{ij}}$ is the error term of the model and β is the parameters of the model.

The model that we create is centred explicitly around China's cotton exports. Therefore, it is important to consider the geological structure of China's cotton exports, as represented previously. Cortes (2007) pointed out that the basic formulation of the chosen gravity equation can be strengthened by adding additional variables, whereas this inclusion of variables gives us the possibility of adopting the gravity model in the specific circumstances of the bilateral trade under review. In this way, as explanatory variables, we add some additional factors to better explain China's cotton export flow.

Income is one of the most important factors for trade between two nations, with GDP having the highest possible proportion of the nation's potential trade. The GDP of the trading nation (China) measures productive capability, while the GDP of the importing nation estimates the absorptive limit. These two factors must be positively identified with trade (Kalbasi, 2001). This study likewise included the factors of GDP per capita of importing countries and China. It is normal that when the per capita income of country j is higher, the demand for imports is higher.

This model uses the variable distance as an intermediary of transactivity costs, including transport costs. The most prominent outright geological separation variable is the distance between capitals as an intermediary for the economic focal point of a nation. An expansion in the distance between nations is relied on to build transport costs, which accordingly decreases trade. This variable will have a negative sign (Kristjansdottir, 2005). Proenca et al. (2002) included the real bilateral exchange rate in their observational model as a logical variable for Mercosur-EU trade streams. The coefficient of the real bilateral exchange rate is assumed to be negative. This research presents the dummy variable of common borders. Therefore, the value of cotton exports ($\boldsymbol{X_{ij}}$) from China $\boldsymbol{i}$ to its major trading partner j is defined as follows:

$$X_{ij=\beta_0} Y_i^{\beta 1} Y_j^{\beta 2} L_i^{\beta 3} L_j^{\beta 4} P_i^{\beta 5} P_j^{\beta 6} T_j^{\beta 7} Exr_{ij}^{\beta 8} D_{ij}^{\beta 9} B_{ij}^{\beta 10} C_{ij}^{\beta 11} R_{ij}^{\beta 12} eu^{ij} \quad [4]$$

where $\boldsymbol{\beta_0}$ is a constant, $\boldsymbol{Y}$ represents GDP, $\boldsymbol{L}$ is the population, P is the GDP per capita, $\boldsymbol{Exr}$ is the exchange rate, $\boldsymbol{D}$ represents the distance, $\boldsymbol{B}$ is dummy variables of the common border, $\boldsymbol{C}$ is the common language and $\boldsymbol{R}$ **is** the regional trade agreement. For the panel data estimation, this model is recomposed as the accompanying log-linear equation as follows:

$$\begin{aligned}(X_{ij}) = \beta_0 + \beta_1(Y_i) + \beta_2(Y_j) + +\beta_5(P_i) + \beta_6(P_j) + \beta_7(T_j) + \\ \beta_8(Erx_{ij}) + \beta_9(D_{ij}) + \beta_{10}(B_{ij}) + \beta_{11}(C_{ij}) + \beta_{12}(R_{ij}) + \\ eu_{ij}\end{aligned} \quad [5]$$

The above equation is estimated with a Poisson regression and average marginal effects of the gravity model. Frome et al. (1973) described a method of regression analysis for Poisson distribution data with both linear and nonlinear regression models in the explanatory variables. Poisson regression methods provide an appropriate means for analysing count data, which occurs frequently in a wide variety of applications. Such data typically exhibit a strong mean-variance relationship, and this is often a near-equality relationship, as in the Poisson distribution, which is then the appropriate distribution to use because it also reflects the discreteness in the data. If the counts are large, then the discreteness ceases to be important, and the Poisson distribution will be well approximated by a normal distribution with a variance equal to the mean (Hinde J, 1982).

Advantages of a Poisson Regression Model

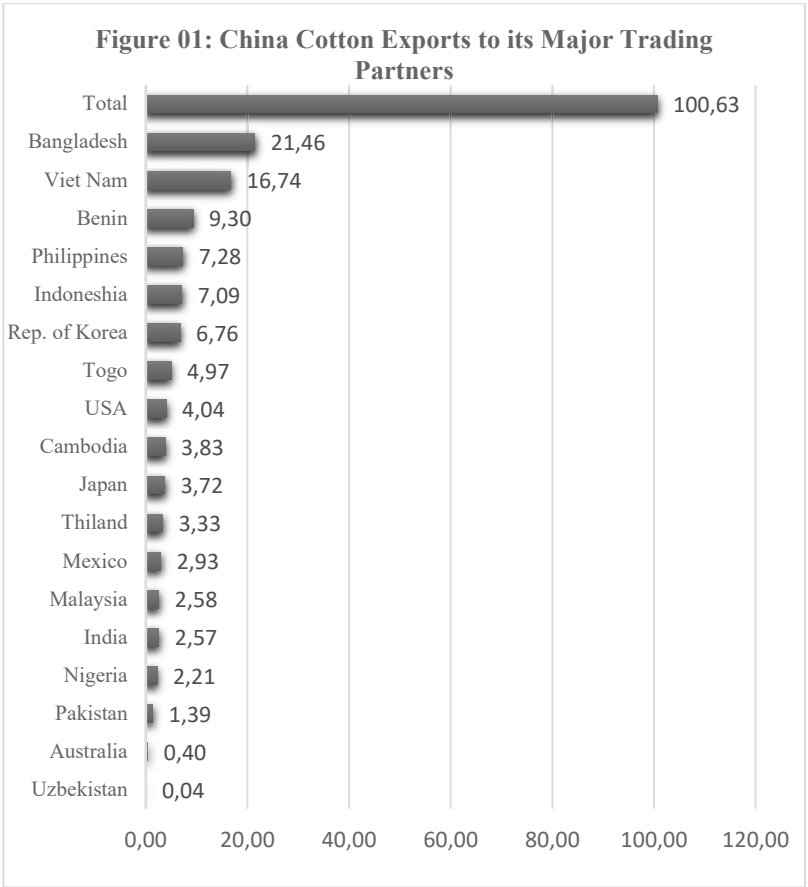
The Poisson model overcomes some of the problems of the normal model. First, the Poisson model has a minimum value of 0. It will not predict negative values. This makes it ideal for a distribution in which the mean or the most typical value is close to 0.

4. Empirical Results

In this section, the descriptive statistics, changes in the structure, and the value of the cotton trade are calculated. Figure 01 shows China's exported cotton during the period of 2000-2017. In this time, China's total cotton exports to 18 partners amounted to $85.94 billion. Vietnam is the second-

largest importer of cotton, whereas Benin is the third-largest importer of cotton from China. Similarly, Table 2 presents the nominal value of cotton imports from China of selected countries over the selected time interval. The 18 importing countries present the aggregate value of cotton products. The value of Bangladesh cotton imports from China was US$ 0.20 billion in 2000 and 2001, which increased to US$ 2.37 billion in 2017. Out of the 18 countries that import cotton from China, Bangladesh is the largest importer of cotton from China. The second-largest importer of cotton from China is Vietnam, which imported $1.66 billion worth of cotton in 2017.

Figure 01: China Cotton Exports to its Major Trading Partners



Source: Authors' own calculation from UN Com trade data.

Table 2. The nominal value of cotton imports from China to its major importing countries (billion US%).

Year	Australia	Bangladesh	Benin	Cambodia	India	Indonesia	Japan	Malaysia	Mexico	Nigeria	Pakistan	Philippines	R. of Korea	Thailand	Togo	USA	Uzbekistan	Vietnam	Total
2000	0.03	0.20	0.05	0.03	0.03	0.12	0.16	0.05	0.02	0.01	0.00	0.04	0.29	0.08	0.01	0.14	0.00	0.02	1.31
2001	0.02	0.20	0.08	0.05	0.02	0.07	0.14	0.02	0.03	0.02	0.00	0.04	0.25	0.04	0.02	0.12	0.00	0.02	1.15
2002	0.03	0.25	0.14	0.06	0.03	0.12	0.18	0.03	0.08	0.03	0.01	0.06	0.31	0.06	0.04	0.12	0.00	0.07	1.64
2003	0.03	0.36	0.22	0.08	0.05	0.16	0.24	0.03	0.12	0.08	0.01	0.07	0.33	0.12	0.07	0.13	0.00	0.12	2.22
2004	0.03	0.40	0.20	0.12	0.08	0.16	0.27	0.04	0.16	0.04	0.01	0.09	0.30	0.09	0.09	0.12	0.00	0.15	2.33
2005	0.02	0.54	0.31	0.13	0.12	0.24	0.26	0.06	0.10	0.03	0.01	0.10	0.37	0.11	0.11	0.21	0.00	0.21	2.91
2006	0.02	0.69	0.42	0.11	0.14	0.33	0.28	0.05	0.12	0.02	0.01	0.11	0.42	0.15	0.13	0.21	0.00	0.27	3.48
2007	0.02	0.75	0.64	0.13	0.16	0.39	0.25	0.06	0.09	0.01	0.02	0.10	0.40	0.18	0.17	0.21	0.00	0.37	3.96
2008	0.02	0.98	0.99	0.14	0.14	0.41	0.24	0.10	0.10	0.02	0.02	0.10	0.41	0.22	0.23	0.25	0.00	0.45	4.81

2009	0.01	0.89	0.80	0.11	0.12	0.36	0.19	0.18	0.13	0.03	0.01	0.14	0.40	0.21	0.24	0.20	0.00	0.63	4.68
2010	0.02	1.33	0.85	0.19	0.20	0.55	0.25	0.14	0.17	0.07	0.05	0.17	0.57	0.29	0.39	0.29	0.02	1.17	6.74
2011	0.03	1.79	0.85	0.28	0.18	0.66	0.31	0.18	0.25	0.12	0.07	0.28	0.56	0.27	0.58	0.29	0.00	1.56	8.27
2012	0.02	1.83	0.59	0.30	0.21	0.61	0.22	0.26	0.26	0.19	0.08	0.49	0.40	0.27	0.72	0.29	0.00	1.46	8.19
2013	0.02	2.16	0.92	0.38	0.28	0.65	0.19	0.30	0.23	0.19	0.08	0.80	0.43	0.26	0.51	0.29	0.00	2.50	10.18
2014	0.03	2.15	0.85	0.39	0.22	0.65	0.17	0.33	0.27	0.18	0.18	0.46	0.37	0.25	0.59	0.28	0.00	2.38	9.74
2015	0.02	2.26	0.59	0.40	0.19	0.56	0.13	0.38	0.26	0.58	0.37	0.84	0.35	0.27	0.38	0.35	0.00	2.00	9.94
2016	0.02	2.32	0.35	0.40	0.19	0.51	0.12	0.19	0.25	0.23	0.25	1.53	0.34	0.23	0.34	0.26	0.00	1.69	9.25
2017	0.02	2.37	0.44	0.53	0.21	0.53	0.11	0.19	0.26	0.35	0.20	1.85	0.26	0.24	0.34	0.28	0.01	1.66	9.84
Total	0.40	21.46	9.30	3.83	2.57	7.09	3.72	2.58	2.93	2.21	1.39	7.28	6.76	3.33	4.97	4.04	0.04	16.74	100.63

Table 3. Nominal value of Chinese cotton exports to selected countries over the selected period intervals (billion US$)

Country	2000-2005	2006-2011	2012-2017	Total
Australia	0.16	0.11	0.13	0.40
Bangladesh	1.95	6.42	13.09	21.46
Benin	1.00	4.56	3.74	9.30
Cambodia	0.47	0.97	2.39	3.83
India	0.32	0.94	1.30	2.57
Indonesia	0.88	2.71	3.51	7.09
Japan	1.25	1.51	0.96	3.72
Malaysia	0.23	0.71	1.65	2.58
Mexico	0.52	0.88	1.53	2.93
Nigeria	0.21	0.27	1.73	2.21
Pakistan	0.04	0.18	1.16	1.39
Philippines	0.40	0.91	5.96	7.28
Rep. of Korea	1.84	2.77	2.15	6.76
Thailand	0.50	1.32	1.52	3.33
Togo	0.34	1.75	2.88	4.97
USA	0.84	1.46	1.74	4.04
Uzbekistan	0.00	0.02	0.04	0.06
Vietnam	0.60	4.45	11.69	16.74
Total	11.55	31.94	57.17	100.66
	Percent Share			
Australia	0.16	0.11	0.13	0.40
Bangladesh	16.86	20.10	22.91	21.32
Benin	8.67	14.27	6.54	9.24
Cambodia	4.06	3.04	4.19	3.81
India	2.80	2.96	2.27	2.55
Indonesia	7.59	8.48	6.14	7.05
Japan	10.82	4.73	1.68	3.70
Malaysia	1.97	2.22	2.88	2.57
Mexico	4.51	2.75	2.68	2.91
Nigeria	1.85	0.84	3.02	2.20
Pakistan	0.38	0.58	2.03	1.38
Philippines	3.50	2.85	10.44	7.23
Rep. of Korea	15.92	8.67	3.76	6.71
Thailand	4.29	4.12	2.65	3.31
Togo	2.92	5.47	5.05	4.94
USA	7.27	4.57	3.05	4.01
Uzbekistan	0.03	0.07	0.07	0.04
Vietnam	5.17	13.93	20.46	16.63

Table 3 presents the value of the exports of the selected countries in three-year intervals and the changes in the share of these countries in the total cotton

products trade of the selected countries. Table 3 shows the nominal value of the cotton imports of selected countries over the selected time intervals from 2000 to 2017. The nominal value of Bangladesh cotton imports increased, and Bangladesh remains the largest consumer and importer of cotton from China. China accounted for 0.16 percent of the cotton from 2000-2005. This proportion increased to 21.46 percent in the 2012-2017 time period. Vietnam is the second-largest cotton importer from China. Vietnam accounted for 0.60% of cotton imports from 2000-2005. This proportion increased to 16.74% in the 2012-2017 time period.

4.1 Empirical Results

The results of the Poisson regression along with average marginal effects of the gravity model equations are presented in Table 5. The results of the Poisson regression in Table 5 show that an increase in importer GDP significantly increases China's cotton exports. The importer GDP coefficient is positive with an estimated value of 0.054, i.e., holding constant for all other variables, a one-percent increase will result in an approximately 0.054% increase in Chinese cotton exports. The highly significant coefficient of China's GDP is positive with an estimated value of 0.21396. This result shows that keeping all else constant, a one-percent increase in China's GDP will increase cotton exports from China by 0.21396 percent, and a higher GDP of the reporter country shows higher production potential that may lead to higher exports. According to Garcia, Pabsdorg, and Herrera (2013), exporter GDP has a positive influence on trade. The high outcome is reliable with the basic assumption of the gravity model that shows that trade will increase with an increase in the market size. In contrast, GDP per capita is negatively associated with China's cotton exports. This signifies that a one-percent increase in importing countries' GDP per capita will decrease China's cotton exports by -1.52%. Our findings are supported by Abidin, Bakar, and Sahlan (2013), ZainalAbidin et al. (2015), Bhavan (2016), and Metulini, Patuelli, and Griffith (2018); similarly, in their empirical studies, they found that per capita GDP has negative effects on trade. Likewise, Unakitan and Aydin (2012) found that per capita GDP is negatively correlated with the total exports of Egypt. The population has a positive effect on trade flows between China and its trading partners as an increase in population increases exports and imports. According to He, Kwamena, and Wang (2013), the importer population has a large and positive effect on exports because more research and development

and labour involve the production process.

Furthermore, exchange rate variations also have significant effects on agricultural trade, as suggested by Cho, Sheldon, and McCorriston (2002) and Huchet-Bourdon and Bahmani-Oskooee (2013). A higher exchange rate normally has a positive effect on agricultural exports (Kandilov, 2008). In this study, the exchange rate has a significant positive effect on China's cotton exports. The positive coefficient shows that a devaluation in China's currency against the currencies of its partner's countries increases cotton exports. The exchange rate has a great influence on the exports of some developing nations, as indicated by Chaudhary, Hashmi and Khan (2016), which implies that a fall in comparative domestic prices due to exchange rate devaluation makes exports inexpensive in global markets and results in increased demand for exports (Shi & Li, 2017; Temitope & Akani, 2017; Mahmood et al., 2017; Tran, Phi, & Diaw, 2017; Tumwebaze & Karamuriro, 2015). According to Eve, Chan and Au (2007), the real exchange rate plays a crucial role in determining the volume of textile exports from China. When there is a 10% real depreciation/appreciation in RMB against foreign currency, there will be a 2% increase/decrease in exports.

Moreover, tariffs have negative effects on China's cotton exports. This implies that when the tariff rate is higher, the imports of a country are lower. Our results indicate that a 1-percent increase in the tariff rate will decrease cotton exports of China by -0.1163 percent. The distance has a negative relation with China's cotton exports, and the transport cost is relevant to the distance. This signifies that cotton trade decreases with an increase in the distance between China and its trading partners. This finding is consistent with the basic gravity equation that suggests that a greater distance tends to decrease trade due to high transportation (Aitken, 1973; Bergstrand, 1985, Bikker, 1987; Brada and Mendez, 1983; Frankel and Rose, 2002; Linneman, 1966; Thursby and Thursby, 1987). Our results are also consistent with those of previous studies (Fadeyi et al., 2014; Sun & Reed 2010).

Table 5. Gravity model estimation results of Chinese cotton exports

	The gravity model of the cotton-estimated Poisson regression	Average marginal effects of the cotton estimated using the Poisson method
Variables	**Cotton**	**Cotton**
China GDP	3.76*** (0.000)	0.21396*** (0.000)
Importers GDP	3.79*** (0.000)	0.05400*** (0.000)
Exchange Rate	0.00076*** (0.000)	0.11617*** (0.000)
China Pop	1.23*** (0.000)	1.6281*** (0.000)
Importers Pop	3.97*** (0.000)	0.00539*** (0.000)
China GDPPC	0.00053*** (0.000)	0.21831*** (0.000)
Importers GDPPC	-1.52*** (0.000)	-0.04205*** (0.000)
Distance	-0.00015*** (0.000)	-0.09591*** (0.000)
Tariffs	-0.1163*** (0.000)	-0.82791*** (0.000)
Common Border	-0.0414*** (0.000)	-0.0069*** (0.000)
Constant	17.618*** (0.000)	
Fixed Effects		
Year	2.4e+09***	
Partner	5.9e+10***	
Number of Observation	432	
Pseudo R-Squared	0.7028***	

*Source: Author estimation. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1*

5. Conclusion and Policy Recommendations

This study explored China's cotton exports and their determinants for the Chinese economy by using the gravity model. The analysis examined China's cotton exports to its 18 major trading partners during the period of 2000 to 2017. Evidence from the empirical results of the Poisson regression indicated that among the control variables, the partner population has a positive influence on China's cotton exports, as the increase in the population of the importer countries increases

the demand for imports. The empirical findings also suggested that the depreciation of the Chinese Yuan against the currencies of its importing countries encourages cotton exports, the government should keep stabilizing the exchange rate, and the government should implement appropriate exchange rate policies for regulating the real exchange rate, since this is more suitable to the acceleration of output capability and economic growth. The results also suggested that Chinese cotton exports appear to decrease with a rise in the tariff rate of partner countries, as tariffs have a significant negative impact on Chinese cotton exports. The traditional variables in the gravity equation, such as GDP, have a positive impact, while distance has a negative impact on cotton exports, which suggests that greater distance tends to decrease trade due to high transportation costs. However, geographical distance is no longer a major hindrance to international trade, as technological improvements in international transportation and a reduction in transportation costs can reduce the adverse impact of distance on international trade.

This study recommends that China should make efforts to reduce the cost of trade in cotton with neighbouring countries such as Pakistan, India, Bangladesh, and Afghanistan to achieve deeper economic integration. For this reason, logistics are very important for exports, which could be strengthened by improved interconnections such as structure, air travel, and improved maritime transport between China and its importing partners. In future research work, disaggregated export data will be analysed, and other major determinants or trade potential will be estimated.

References

Abidin I.S.Z., Sahlan R. (2013), *The determinants of exports between Malaysia and the OIC member countries: A gravity model approach*, Procedia Economics and Finance, 5, 12-19.

Abraham F., Van Hove J. (2005), *The rise of China: Prospects of regional trade policy*, Review of World Economics, 141(3), 486–509.

Aitken N.D. (1973), *The effect of the EEC and EFTA on European trade: A temporal cross-section analysis*, The American Economic Review, 63(5), 881-892.

Anh S.T.L., Trang T.Q., Huong N.T., Bang H.H. (2018), *Unparticle effects on Bhabha scattering*, Canadian Journal of Physics, 96(3), 268-271.

Atif R.M., Haiyun L., Mahmood H. (2017), *Pakistan's agricultural exports, determinants and its potential: An application of stochastic frontier gravity*

model, The Journal of International Trade & Economic Development, 26(3), 257-276.

Baffes J. (2003), *Cotton and developing countries: A case study in policy incoherence*, World Bank Trade Note, 10(10).

Baffes J. (2005), *The "cotton problem"*, The World Bank Research Observer, 20(1), 109-144.

Barro R.J. (1991), *Economic growth in a cross section of countries*, The quarterly journal of economics, 106(2), 407-443.

Bergstrand J.H. (1985), *The gravity equation in international trade: some microeconomic foundations and empirical evidence*, The review of economics and statistics, 67(3), 474-481.

Bikker J.A. (1987), *An international trade flow model with substitution: an extension of the gravity model*, Kyklos, 40(3), 315-337.

Brada J.C., Mendez J. (1983), *Regional economic integration and the volume of intra-regional trade: a comparison of developed and developing country experience*, Kyklos, 36(4), 589-603.

Caporale G.M., Sova A., Sova R. (2015), *Trade flows and trade specialisation: The case of China*, China Economic Review, 34, 261-273.

Caporale G.M., Sova A., Sova R. (2015), *Trade flows and trade specialisation: The case of China*, China Economic Review, 34, 261–273.

Chan E.M., Au K.F. (2007), *Determinants of China's textile exports: An analysis by gravity model*, Journal of the Textile Institute, 98(5), 463-469.

Chan E.M., Au K.F., Sarkar M.K. (2008), *Antecedents to India's textile exports: 1985? 2005*, International Journal of Indian Culture and Business Management, 1(3), 265-276.

Chaudhary G.M., Hashmi S. H., Khan M.A. (2016), *Exchange rate and foreign trade: a comparative study of major South Asian and South-East Asian countries*, Procedia-Social and Behavioral Sciences, 230, 85-93.

Chen K.M., Rau U.H., Chiu R.L. (2011), *Determinants of China's exports to the United States and Japan*, Chinese Economy, 44(4), 19-41.

Cho G., Sheldon I.M., McCorriston S. (2002), *Exchange rate uncertainty and agricultural trade*, American Journal of Agricultural Economics, 84(4), 931-942.

Cortes M. (2007), *Composition of Trade between Australia and Latin America: Gravity Model*, Department of Economics, University of Wollongong https://ro.uow.edu.au/commwkpapers/189.

Dadakas D., GhazviniKor S., Fargher S. (2020), *Examining the trade potential of the UAE using a gravity model and a Poisson pseudo maximum*

likelihood estimator, The Journal of International Trade & Economic Development, 29(5), 619-646.

Fadeyi O.A., Bahta T.Y., Ogundeji A.A., Willemse B.J. (2014), *Impacts of the SADC free trade agreement on South African agricultural trade*, Outlook on Agriculture, 43(1), 53-59.

FAO I., WFP W., UNICEF (2019), *The state of food security and nutrition in the world 2019: safeguarding against economic slowdowns and downturns*.

Frankel J., Rose A. (2002), *An estimate of the effect of common currencies on trade and income*, The quarterly journal of economics, 117(2), 437-466.

Frome E.L., Kutner, M. H., & Beauchamp, J. J. (1973), *Regression analysis of Poisson-distributed data*, Journal of the American Statistical Association, 68(344), 935-940.

García E.C., Navarro Pabsdorf M., Gómez Herrera E. (2013), *The gravity model analysis: an application on MERCOSUR trade flows*, Journal of Economic Policy Reform, 16(4), 336-348.

Hatab A.A., Romstad E., Huo X. (2010), Determinants of Egyptian agricultural exports: A gravity model approach, Modern Economy, 1(03), 134.

Hinde J. (1982), *Compound Poisson regression models*, in GLIM 82: Proceedings of the International Conference on Generalised Linear Models (pp. 109-121), Springer, New York, NY.

Huchet-Bourdon M., Bahmani-Oskooee M. (2013), *Exchange rate uncertainty and trade flows between the United States and China: The agricultural versus the nonagricultural sector*, Chinese Economy, 46(2), 29-53.

Hufbauer G.C., Elliott K.A., Cyrus T., Winston E. (1997), *US economic sanctions: Their impact on trade, jobs, and wages*, No. Working Paper Special (2),

Johnson J.D., Kiawu J., MacDonald S., Meyer L.A., Skelly C. (2013), *The world and United States cotton outlook*, No. 1457-2016-120319.

Kabaklarli E., Duran M.S., ÜçLER Y.T. (2018), *High-technology exports and economic growth: panel data analysis for selected OECD countries*. Forum Scientiae Oeconomia, 6(2), 47-60. ,

Kalbasi H. (2001, July), *The gravity model and global trade flows*, 75th International Conference on Policy Modeling for European and Global Issues, Brussels, July (5-7),

Kandilov I.T. (2008), *The effects of exchange rate volatility on agricultural trade*, American Journal of Agricultural Economics, 90(4), 1028-1043.

Karamuriro H.T., Karukuza W.N. (2015), *Determinants of Uganda's export performance: A gravity model analysis*, International Journal of Business and Economic Research, 4(2), 45-54.

Kristjánsdóttir H. (2005), *A gravity model for exports from Iceland*, Centre for Applied Microeconometrics, Department of Economics, University of Copenhagen.

Lateef M., Tong G.J., Riaz M.U. (2018), *Exploring the Gravity of Agricultural Trade in China–Pakistan Free Trade Agreement*, The Chinese Economy, 51(6), 522-533.

Linneman H. (1966), *An Econometric Study on International Trade Flow*, No. 42. Amsterdam, North-Hollan.

Magombo E., Edriss A., Phiri M.A.R. (2017), *Determinants of Malawi's cotton exports from 2001 to 2013*, Journal of Development and Agricultural Economics 9(4), 80-86.

Martínez-Galán E., Fontoura M.P., Proença I. (2002),*Trade Potential in an Enlarged European Union*, Department of Economics at the School of Economics and Management, Technical University of Lisbon, Working Paper.

Martínez-Zarzoso, I., & Nowak-Lehmann, F. (2003), *Augmented gravity model: An empirical application to Mercosur-European Union trade flows*, Journal of applied economics, 6(2), 291-316.

Mesike C.S., Giroh D.Y., Owie O.E.D. (2008), *Analyzing the effect of trade liberalization policy on Nigerian rubber industry*, Journal of Agriculture & Social Sciences, 4(3), 132-134.

Monineath, E. L. (2018), *Analysis of factors affecting the export performance in Cambodia: the ARDL bounds testing approach*, Journal of Managament, Economics, and Indus-trial Organization, 2(2), 35-50

Mukhtar T., Malik S.J. (2010), *Exchange rate volatility and export growth: Evidence from selected South Asian countries*, SPOUDAI-Journal of Economics and Business, 60(3-4), 58-68.

Natale F., Borrello A., Motova A. (2015), *Analysis of the determinants of international seafood trade using a gravity model*, Marine Policy, 60, 98-106.

Rahman R., Shahriar S., Kea S. (2019), *Determinants of exports: A gravity model analysis of the Bangladeshi textile and clothing industries*, FIIB Business Review, 8(3), 229-244.

Rasoulinezhad E., Wei W. (2017), *China's trade with OPEC member countries: A panel-gravity model approach*, The Chinese Economy, 50(5), 339-355.

Sevela M. (2002), *Gravity-type model of Czech agricultural export*, Agricultural economics, 48(10), 463-466.

Shi C., Li J. (2017), *Does dollar-pegging matter? A closer look at US trade deficits with China and Germany*, The Journal of International Trade & Economic Development, 26(4), 451-472.

Sun L., Reed M.R. (2010), *Impacts of free trade agreements on agricultural trade creation and trade diversion*, American Journal of Agricultural Economics, 92(5), 1351-1363.

Tai W.P., Soong J.J. (2014), *Trade relations between China and southeast: Asia strategy and challenge*, Chinese Economy, 47(3), 23-39.

Tai W.P., Soong J.J. (2014), *Trade relations between China and Southeast*, Chinese Economy, 47(3), 23–39.

Tang Y., Zhang Y., Findlay C. (2014), *What explains China's rising trade in services*, Chinese Economy, 46(6), 7–31.

Temitope D.J., Akani O.P. (2017), *Exchange rate volatility and trade balance: evidence from Nigeria*, Exchange, 3(5), 4-10.

Thursby J.G., Thursby M.C. (1987), *Bilateral trade flows, the Linder hypothesis, and exchange risk*, The Review of Economics and Statistics, 488-495.

Tinbergen J.J. (1962), *Shaping the world economy; suggestions for an international economic policy*.

Tran T.A.D., Phi M.H., Diaw D. (2017), *Export diversification and real exchange rate in emerging Latin America and Asia: A South–North vs. South-South decomposition*, The Journal of International Trade & Economic Development, 26(6), 649-676.

Tung C.Y., Yeh J. (2014), *Development of a cross-strait economic cooperation framework agreement*, Chinese Economy, 47(3), 40-56.

Unakitan G., Aydin B. (2012), *An econometric analysis of soybean production in Turkey*, Journal of Tekirdag Agricultural Faculty, 9(1), 6-14.

Urdinez F., Masiero G. (2015), *China and the WTO: Will the market economy status make any difference after 2016?*, Chinese Economy, 48(2), 155–172.

Vu H.T., Doan H.Q. (2013), Vietnamese rice exports: Do large destination markets stimulate?, MPRA Paper No. 63891.

Wilson J.S., Otsuki T., Majumdsar B. (2003), *Balancing food safety and risk: do drug residue limits affect international trade in beef?*, Journal of International Trade & Economic Development, 12(4), 377-402.

Xuegang C., Zhaoping Y., Xuling L. (2008), *Empirical analysis of*

Xinjiang's bilateral trade: Gravity model approach, Chinese Geographical Science, 18(1), 9-16.

Zhang T. (2011), *The cotton sector in china*, The sustainable trade initiative.

G. & L. E. R., Vol. 26 No. 2, 2022

Iacopo Odoardi[*], Davide Quaglione[^], Dario D'Ingiullo[ŧ], Donatella Furia[‡], Piera Cascioli[•]

THE INCREASE IN THE GENDER GAP WITH AGE: AN ANALYSIS ON ITALIAN NEETS

Received: 29 October 2021 / Accepted: 25 March 2022

Abstract

In Italy, small gender differences are present among "young" NEETs (not in education, employment or training, 15-24 years), while the gender gap increases considerably among "older" NEETs (25-34 years). We analyze the socioeconomic factors that influence the NEET gender gap, which increases with age. We consider regional data on four groups of NEETs (by age and gender) adopting a system generalized method of moments (SYS-GMM) estimator on a 2010-2018 panel dataset. Group analysis makes it possible to detect specific determinants (problems related to the study and work choices of young people) causes of the gap. Our results suggest that women are exposed to a higher risk of persistence in NEET status due to labor issues, while family/social obligations lose their influence with age. General economic and unemployment issues are connected to the NEET status mainly among men.

JEL CODES: E24; I25; R10; J16

KEYWORDS: GENDER INEQUALITIES; NEET; SCHOOL DROPOUT; UNEMPLOYMENT

[*] University of Chieti-Pescara, Italy; *E-mail address*: iacopo.odoardi@unich.it

[^] University of Chieti-Pescara, Italy; *E-mail address*: davide.quaglione@unich.it

[ŧ] University of Chieti-Pescara, Italy; *E-mail address*: dario.dingiullo@unich.it

[‡] University of Chieti-Pescara, Italy; *E-mail address*: donatella.furia@unich.it

[•] University of Chieti-Pescara, Italy; *E-mail address*: piera.cascioli@unich.it

1. Introduction

After the outbreak of the 2007-2008 crisis and its serious recessionary consequences, the social and economic situation has worsened for some categories and social groups at risk, because of unemployment issues (Bell and Blanchflower, 2011) and increasing inequalities (Mussida and Parisi, 2020). Among the weakest social groups, we find young people who are not employed or have low education. An increasingly share of these young people is represented by the so-called NEETs, which have been particularly badly affected by the worsening of job opportunities due to the lack of economic recovery (Scarpetta et al. 2010; Signorelli and Choudhry 2015).

Although the general worsening of conditions for young people are recognized as dramatic consequences of the Great Recession (Signorelli and Choudhry 2015), a generic reference to such category can lead to an incomplete understanding of the phenomenon. NEETs can be distinguished by age and by gender, and each group has distinct characteristics.

In this article we consider the situation in Italy, taking into account different groups of NEETs in the post-recession period. Our research starts by the empirical evidence suggesting a worrying increase in the gender gap between NEETs with age.

This situation is evident when comparing NEETs by age group: the 2009-2017 average NEET rate for males aged 15-24 was 20.5% and 20.1% for women. During the same period, the rate was only one percentage point higher for older males (25-34 years[1]), reaching 37.3% for women[2].

This strong disparity implies that we do not detect clear gender gaps up to a certain age partly due to compulsory education—indeed the situation is slightly better for women—because such education takes place before society and the family, in several ways, discourage women from finding a job or continuing their studies.

Our research is aimed at investigating the underlying causes that worsen the condition of women with age (compared to control groups, i.e. young people and men).

This research seems relevant to the Italian case and applicable to less resilient contexts for many reasons. First, the direct relationship between increasing age and the risk of becoming a NEET is a phenomenon of social

[1] Although this is an age group not usually associated with NEET status, the transition to adulthood in Italy is postponed due to habits, economic conditions, labor market characteristics (e.g., Aasve et al. 2001)
[2] Our elaborations on Eurostat data.

interest (see ILO 2016). Second, the difficulties that induce women in Italy to become NEETs with age are studied (from family commitments to lesser protections in some new contractual forms; see the literature review by Contini et al. 2019), and Italy is one of the advanced countries with the lowest labor participation rate for women, and particularly affected are those with family responsibilities (Del Boca 2002).

Our contribution to the literature follows studies that investigate different age groups of NEETs (e.g., Andersson et al. 2018), and we propose a double comparison of NEETs by both age and gender to determine whether other social constraints—in addition to the disparities present in the labor market—cause an increase in the NEET gender gap with increasing age. The goal of this comparison is to find specific policy solutions that may go beyond traditional public measures such as those for labor integration. For example, in Italy, we observe specific-group interventions to promote employment as the "Youth Guarantee" plan that is targeted to NEETs under 30 (e.g., training, internships) and contributory incentives to businesses with the aim of reducing gender gaps in specific sectors (the so-called "Fornero Law").

To answer our research question, we investigate the influence of known causes of inactivity[3] on the NEET rates at the macro (regional) level for the period 2010-2018. The main causes include (*i*) labor opportunities and the importance of reaching an advanced education (which are captured by the unemployment rate (by age and gender)[4] and the school dropout rate[5]), (*ii*) family background (which influences the possibility of scholastic achievement and work success) and (*iii*) family/social commitments usually attributed to women (observed through marriage and early childbirth).

To account for reverse causality among the dependent variables (young and old NEET rates) and the unemployment and dropout rates—i.e., three phenomena that could influence each other—a SYS-GMM estimator is used with the panel dataset.

This article is organized as follows. In Section 2, we discuss two main facets of the NEET phenomenon related to our article: a brief explanation and

[3] We refer generically to the inactivity of the young people involved, while we do not consider the subdivision of NEETs between inactive and unemployed (for lack of data availability).

[4] Job opportunities for men and women have decreased with the crisis, and if the gaps in unemployment have not increased much, it is because of worsening employment opportunities for men and, sometimes, because of the availability of the worst types of jobs for women (e.g., Castellano and Rocca 2017).

[5] The return to education in Italy is known to be very low (e.g., Cainarca and Sgobbi 2012). In addition, women pay more penalties than men with the same characteristics, and even more penalties than men among those with low levels of education (Mussida and Picchio 2014).

the international experience in terms of gender differences. In Section 3, we describe the data and econometric strategy. We present the results in Section 4, followed by our policy suggestions in Section 5.

2. Literature survey

2.1 A brief explanation of the NEET phenomenon

The NEET phenomenon reflects the progressive social precariousness, economic insecurity and often the greater social disparities that are present in many countries. The first attempts to represent this category of young people led to the formulation of the figure called "Status Zer0" (Istance et al. 1994), which seemed to indicate a lack of status with negative relevance (Furlong 2006). The NEET phenomenon was formally acknowledged only in the late 1990s in the Social Exclusion Unit report (1999) referred to the UK.

The definition provided by the International Labor Organization illustrates the variety of people involved: "*the NEET rate includes youth who are unemployed, unavailable to work due to illness, disability or family responsibilities, discouraged, or voluntarily NEET*" (ILO 2017, p. 21). The heterogeneity in the subjects affected implies that several different triggers must be identified and investigated. In general, the problem of inactivity connected to the NEET status arises when young people's inability to adapt and oversensitivity to great social changes (Rahman 2007) combine with the negative effects of severe economic crises, particularly crises affecting members of the most vulnerable groups, e.g., by worsening the efficiency of the labor market (Scarpetta et al. 2010; Signorelli and Choudhry 2015)[6]. In this sense, the scant availability of suitable jobs and precarious employment situations (Standing 2011) related to the occupations of young people (Chung et al. 2012) can be considered determinants of discouragement.

The early interruption of studies and the scant availability of decent jobs for the youngest reinforce social weaknesses and the risk of economic inactivity, together implying a debasement of the role of young people in society (ILO 2017). Furthermore, opportunities that arise through family support remain important with respect to life experiences (Pitkänen et al.

[6] An aspect that is repeated during crises over time is the underlying youth joblessness emergency that emerged in previous decades (Lynch and Richardson 1982) due to the link between the economic cycle and unemployment levels (ILO 2015), particularly for young people (Choudhry et al. 2012).

2021) and significantly affect the risk of inactivity behaviors (Alfieri et al. 2015).

The response of policymakers has sometimes focused on reducing inequalities in academic opportunities and career participation by promoting social inclusion interventions and training courses (Ryan 2001) and regulating the difficult transitional period from the end of studies to the first job (Caroleo et al. 2017; Stanwick et al. 2017).

However, the progressive impact and persistence of NEET status suggests a major focus on conditions among NEETs beyond the above mentioned transition periods, particularly those with deteriorating life conditions (e.g., depression, long-term inactivity, low family income), the trajectories of which began at a young age and increased with the duration of inactivity itself (Basta et al. 2019). This deterioration reflects the fact that with increasing age, self-efficacy and the intensity of the job search tend to decrease with the lowering of expectations among people who have been in difficulty for some time (Almeida and Simões 2020). People who have been NEET for long periods also doubt that they will be hired due to their long unemployment (e.g., Maguire et al. 2013), and these difficulties often increase due to their increased family responsibilities (relative to younger people), influencing their income conditions and the well-being of their families until the problems become a social malaise (Andersson et al. 2018). Older NEETs also face a lower expected labor income due to delayed entry into the labor market, which contributes to the persistence of NEET status (Tanaka 2020).

2.2 Gender disparities among NEETs: some experiences

Disparities in NEET levels across genders can be found in almost all economic contexts since some causes of disconnection from both education and the labor market (e.g., interruptions to education and employment problems) can affect males and females differently (Tamesberger and Bacher 2014; Zuccotti and O'Reilly 2019). The NEET gender gap is mainly explained by gender roles, which essentially attribute greater family responsibilities to women without the necessary help from family or society (Carcillo et al. 2015; OECD 2016). Some similar features characterize many countries and cultures. For example, Mauro and Mitra (2020), in a cross-country study, analyzed Eastern Europe and Central Asia after the crisis, and despite finding a reduction in the NEET gender gap, they found common characteristics among young NEET women, such as being married, less educated, older, and living

in rural areas. In this sense, the increase in the NEET rate with age, especially for women, is a well-documented phenomenon (e.g., Thomposon 2011 for England).

However, available studies on gender differences among NEETs suggest causes based on countries' socioeconomic characteristics. Zuccotti and O'Reilly (2019) show the relevance of family conditions for NEETs, finding that British and migrant backgrounds influence family characteristics and traditions, as well as the different job opportunities available, and even the lower risks for males are not generalizable (e.g., this does not hold for the Caribbean group). Gutman et al. (2014) find that young Britons have different responses by gender to increasing uncertainty in the labor market. Men of recent generations seem to be the most affected by uncertainty (work difficulties and low incomes). Better economic and employment conditions benefit women by pushing them to invest in education and careers (e.g., rather than parenthood). However, education may not be a remedy for the female gender. Rodriguez-Modroño (2019) observe that Spanish women with a tertiary education are at higher risk of becoming NEET than less educated women, while this does not happen for Spanish men, though women are more advantaged when they have been in education or training during the last year. Bynner and Parsons (2002) show that male and female NEETs not only differ in the causes of their inactivity but also in the consequences of this phenomenon in the UK. For young men, the consequences mainly include work problems; for young women, they affect family life, dissatisfaction and a reduced sense of control over their lives.

In other countries, the role of women is characterized by restrictions and obligations. For example, Erdoğan et al. (2017) explain the large gender differences between young Turkish NEETs through low female labor force participation (approximately 70% for men and 30% for women), the attribution of household chores and childcare to women, and a generally lower level of education (e.g., leaving school after marriage), mainly due to a patriarchal culture. For Italy, Contini et al. (2019) explain its large gender gap compared to other European countries and the particularly worrying conditions among older women (24-29 years), resulting from weaker education protections, family responsibilities, and to a great extent, high unemployment with a risk of long-term unemployment, which has a discouraging effect. Vancea and Utzet (2018) find that the risk of becoming NEET increases with age for Spanish women, who find it more difficult to re-enter the labor market (e.g., after childbirth) and face worse contractual

conditions, or because they have to spend more time meeting family responsibilities, which in turn worsens their personal prospects for work and earnings. These responsibilities provoke a clearly marked gender-based division of labor. Since being women and having children are among the main motives that explain the NEET condition, Tamesberger and Bacher (2014, on Austria) propose not to consider "*young mothers with care responsibilities who are not actively looking for a job*" (p. 1253) as NEET.

3. Method and data

The econometric model used to investigate the potential causes of distancing from the labor market and education among Italian NEETs has the following form:

$$\mathrm{NEET}_{i,t} = \beta_0 + \beta_1 UR_{i,t} + \beta_2 DROPOUT_{i,t} + \gamma_n \sum_{n=1}^{N} X_{\mathrm{ni,t}} + \mu_i + \eta_t + \varepsilon_{i,t} \qquad [1]$$

In Equation [1], the four dependent variables ($\mathrm{NEET}_{i,t}$) are the NEET rates for the two age groups, 15-24 and 25-34 years (calculated relative to the respective population of young Italians), and in each group, males and females are considered separately (see Table 1 for variable definitions and sources and Table 2 for summary statistics). Our analysis covers 17 regions[7], i, and the 9-year period 2010-2018, t.

The NEET rate is calculated as the proportion of young people neither in employment nor in education and training, representing young people who find themselves disengaged from both education and the labor market (from the Eurostat definition). Among our regressors, we separately consider two variables that are suspected to be endogenous due to reverse causality with the dependent variable, i.e., the unemployment rate ($UR_{i,t}$) and the school dropout rate ($DROPOUT_{i,t}$). The other variables, instead, are considered as exogenous. The unemployment rate (and for young people the youth unemployment rate, i.e. *YUR*) is assumed to be a proxy for the (inverse) efficiency of the labor market. The unemployment rate helps explain NEET persistence since

[7] We use age groups for the NEET phenomenon and the division by gender that differ from the usual NEET rate, which did not allow us to obtain data for all 20 Italian regions (the regions with missing data and not included in the analysis are Aosta Valley, Molise, and Trentino-Alto Adige; the population residing in these excluded regions is the 2.48% of the Italian population in 2018, based on ISTAT data).

remaining unemployed at a young age influences the likelihood of being unemployed in the future and of being detached from the labor market (Bradley et al. 2020). The dropout rate is a measure of early school leaving calculated through missed re-enrollment after middle school and a lack of continuation of other forms of training. Leaving school before obtaining a high educational qualification increases the risk of becoming and remaining NEET (see Giret et al. 2020, for France).

The existence of highly persistent variables and the endogeneity issues related to reverse causality between the dependent variable and the two potential endogenous variables in the first group of regressors can lead to biased estimation results. We address this potential distortion by implementing the SYS-GMM estimator developed by Blundell and Bond (1998), which, thanks to its flexibility and few required assumptions concerning the data generation process (Bontempi and Mammi 2015), is robust within a dynamic panel data framework. By adding the levels equation to the first-difference equation, the SYS-GMM increases the accuracy of the estimated parameters as it exploits the bulk of the variation in the data by adding additional and more informative moment conditions (Bobba and Coviello 2007; Castelló-Climent 2008).

Following the economics literature, we include the following set of control variables ($X_{i,t}$). For each variable, we explain the different effects by gender, and therefore why they are suitable for analysis.

The adult population education level (see *TERTIARY* in Table 1) and average income (*GDP*) are proxies for family socioeconomic status, which capture the human capital of parents and their income, respectively, and which are factors observed to influence NEET status (e.g., Odoardi 2020 for Italy). Such measures of social class play a fundamental role in the transition periods of young people, and also affect work opportunities (Bynner and Parsons 2002). Adult people education, proxy of parents' human capital level, is supposed to condition their contribution to their children's school careers, since higher education is a frequent condition for parental involvement (Hoover-Dempsey and Sandler 1997). In addition, economic status acts as a support for cultural/educational background at the household level (e.g., Zellman and Waterman 1998). In the analysis by gender, these variables can have diverse effects because gender differences can be present in the expectations of parents about their children's education (Wood et al. 2007).

We include proxies of the wide range of family responsibilities (e.g., early marriage and childbirth, Serracant 2014) that can affect NEETs and that

prevent them from resuming their studies or make it difficult for them to find a job. We consider marriage (*AGE_GROOM*/*AGE_BRIDE*) and early parenthood (*CHILDBIRTH*) to be potentially influencing aspects of NEET status (e.g., Gutiérrez-García et al. 2017). Early childbirth is a recognized cause of inactivity (e.g., Mascherini et al. 2012), for which we consider the proxy of children born by very young mothers, and in general, parenthood affects women more than men (Contini et al. 2019). These factors are accounted for in our analysis since older NEETs are more often married and have children (Andersson et al. 2018; Basta et al. 2019).

We also consider the opportunities for young people to continue/resume studies and find a job using ICTs (information and communication technologies). In fact, ICTs are increasingly considered as tools for inclusion of youth at risk (Haché et al. 2010), having provided effective support for young people to improve their academic performance (e.g., Barbas et al. 2017) and job opportunities (e.g., Sadiq and Mohammed 2015), i.e. opportunities that we assume to be decreasing the risk of becoming NEET. About gender differences, the use of ICTs can represent a professional opportunity for women when the gender gaps in the use of ICTs, in related studies, and in work differences narrow (Kirkup 2002). To represent the access to these technologies, we use as a proxy the percentage of households with Internet connections (*INTERNET_HH*) and, with the aim of adding a focus on the working context, the percentage of people who have used the web for active job searches (*ONLINE_LABOR*).

Lastly, poverty is a cause of NEET status and is also related to the transmission of economic conditions between generations (Noh and Lee 2017). We consider the risk of poverty (*POVERTY*) since the possibility of the deterioration of the socioeconomic status of people at risk—particularly young people who are marginalized or unemployed during their transition into independent living—is a recognized problem (France 2008).

To control for time-specific factors that can affect NEET status, each regression includes a full set of time dummies η_t and regional time-invariant characteristics μ_i. Finally, $\varepsilon_{i,t}$ is the idiosyncratic error term.

Table 1. Variable descriptions and sources

	Variable	***Definition***	***Source***
1	NEET_M_1524, NEET_F_1524	People (aged 15-24) who are not in employment, education, or training (%, by gender)	*Eurostat*
2	NEET_M_2534, NEET_F_2534	People (aged 25-34) who are not in employment, education, or training (%, by gender)	*Eurostat*
3	YUR_M, YUR_F	Youth unemployment rate (YUR) for people aged 15-24 (%, by gender)	*Eurostat*
4	UR_M, UR_F	Unemployment rate (UR) for people aged 25+ (%, by gender)	*Eurostat*
5	DROPOUT_M, DROPOUT_F	Population aged 18-24 years with at most a middle school certificate, who have not completed a professional training course recognized by the Region and lasting more than 2 years and who do not attend school courses or participate in training activities (%, by gender)	*ISTAT*
6	TERTIARY	Population aged 25-64 with a tertiary education (ISCED levels 5-8[a]) (%)	*Eurostat*
7	GDP	Gross domestic product per capita in constant 2015 euros	*ISTAT*
8	INTERNET_HH	Households with home Internet access (%)	*ISTAT*
9	ONLINE_LABOR	People (aged 6+) who have looked for work or sent a job application using the Internet in the last 3 months (%)	*ISTAT*
11	AGE_GROOM; AGE_BRIDE	Average age at marriage (years, by gender)	*ISTAT*
12	CHILDBIRTH	Early childbirth, number of children per 10,000 young women: ratio of live births among women aged 10-16 and the resident population of women aged 10-16 (per 10,000 women)	*Our elaborations on Eurostat data*
10	POVERTY	At-risk-of-poverty rate (%)	*Eurostat*

[a] Tertiary education according to the *International Standard Classification of Education* classification: Short-cycle tertiary education, bachelor's or equivalent level, master's or equivalent level, doctorate or equivalent level.

Table 2. Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
NEET_M_1524	153	20.135	7.267	9.3	35.7
NEET_F_1524	153	19.337	5.601	11	32.3
NEET_M_2534	153	22.254	11.221	8.3	49.5
NEET_F_2534	153	37.357	12.003	22.9	61.5
YUR_M	153	34.815	11.912	14.1	62.5
YUR_F	153	39.676	12.535	15.6	70.1
UR_M	153	8.954	4.446	2.8	19.2
UR_F	153	11.599	4.882	5.2	23.9
DROPOUT_M	153	17.551	5.670	6.6	31.8
DROPOUT_F	153	12.038	4.078	4.5	22.3
TERTIARY	153	16.812	2.947	11.6	25.6
GDP	153	25915.53	6497.67	15844.48	38532.54
INTERNET_HH	153	62.186	8.924	44.1	79.6
ONLINE_LABOR	153	18.048	2.840	12.4	25.9
AGE_GROOM	153	37.022	1.963	33.1	40.9
AGE_BRIDE	153	32.896	1.689	29.4	36.3
CHILDBIRTH	153	2.862	2.201	0.2	12.5
POVERTY	153	20.041	10.213	7.8	44.6

Source: Authors' elaborations on ISTAT and Eurostat data.

The average values of the NEET rates in Table 2 highlight the widening of the NEET gender gap with age: the NEET rate for adult women is on average 15% higher than that for males, with maximum values of over 60%. In

contrast, the gender gap between URs is lower than that between YURs[8]. School dropout is a problem mostly related to men, whose diffusion in Italy piques concern in a "knowledge economy", since the Italian dropout levels are among the highest in Europe and causing the lack of adequate education to be one of the main challenges for the national education system (OECD 2020).

4. Results

According to the test elaborated by Pesaran (2020), the null hypothesis of cross-sectional independence in the data cannot be rejected at the 10% level. The tests in Table 3 are applied to both the fixed- and random-effects approaches used.

Table 3. Results of Pesaran's CD test

	NEET_F_15-24	NEET_M_15-24	NEET_F_25-34	NEET_M_25-34
Random-effects	-1.857 (*0.063*)	-2.121 (*0.034*)	3.093 (*0.002*)	1.231 (*0.218*)
Fixed-effects	-1.896 (*0.058*)	-2.026 (*0.043*)	1.797 (*0.072*)	0.924 (*0.355*)
Hausman FE/RE	26166.81 (*0.000*)	27.39 (*0.072*)	13114.27 (*0.000*)	21.47 (*0.018*)

We show the results of our analyses concerning the four groups of NEETs taken into account (young and old NEETs by gender), followed by the tests of the model[9], in Table 4.

[8] The value of the women's indicator reflects the structural weakness of the labor force participation rate, which for women is 41% in Italy, while it reaches 51% in the EU and 56% in the US (based on 2020 World Bank data).

[9] From the test for serial autocorrelation, we can observe that while first-order autocorrelation is present (as expected), the null hypothesis of the absence of higher-order autocorrelation cannot be rejected at the 10% level in all the estimated SYS-GMM models. Furthermore, since the model is overidentified, the statistics from Hansen's (1982) J-test should be reported in order to verify the validity of the instruments. However, the small number of units (N=17) makes this test unreliable: once we instrument both the lagged dependent variable and the two key variables that belong to the first group of regressors, the set of instruments becomes so wide that the statistics take on values equal to 1. Thus, we decided not to report the results of this test.

Table 4. SYS-GMM results (2010-2018)

Dependent variable	NEET_F_15-24	NEET_M_15-24	NEET_F_25-34	NEET_M_25-34
	(SYS-GMM)	(SYS-GMM)	(SYS-GMM)	(SYS-GMM)
$NEET_{i,t-1}$	0.3982***	0.1636*	0.5386***	0.4586***
	(0.1518)	(0.0986)	(0.1421)	(0.1039)
TERTIARY	-0.2609**	0.1504	-0.2617*	-0.0597
	(0.1124)	(0.1415)	(0.1368)	(0.2205)
ln(GDP)	-0.9051	-4.3885**	0.3745	-2.5122
	(2.1889)	(1.7768)	(5.7521)	(2.7956)
ONLINE_LABOR	-0.0078	0.0903	0.0149	0.2099*
	(0.0911)	(0.1007)	(0.0796)	(0.1139)
INTERNET_HH	0.0312	0.0542***	0.0022	-0.0614
	(0.0471)	(0.0175)	(0.0839)	(0.0558)
POVERTY	0.0745	0.1831***	0.1463	0.1482***
	(0.0863)	(0.0514)	(0.1288)	(0.0521)
CHILDBIRTH	0.2291*	-0.0991	0.0479	0.0054
	(0.1217)	(0.0898)	(0.1717)	(0.1386)
AGE_BRIDE/GROOM	0.0141	-0.4220*	-0.5079	0.1635
	(0.4222)	(0.2526)	(0.4995)	(0.2111)
YUR/UR_F	0.1362*		0.6581*	
	(0.0819)		(0.3507)	
DROPOUT_F	-0.0358		-0.1267	
	(0.1476)		(0.1528)	
YUR/UR_M		0.1621**		0.9271***
		(0.0685)		(0.2212)
DROPOUT_M		0.2631***		-0.1062
		(0.0808)		(0.1912)
Constant	15.9994	54.9995***	25.1614	23.336
	(18.8419)	(14.7542)	(63.4776)	(25.2133)
N	17	17	17	17
N*T	153	153	153	153
Arellano-Bond (1)	0.006	0.000	0.000	0.011
Arellano-Bond (2)	0.181	0.356	0.963	0.363

Source: Authors' elaborations on ISTAT and Eurostat data.

Note: *statistically significant at the 10% level; **statistically significant at the 5% level; *** statistically significant at the 1% level. Standard errors clustered by regions are given in parentheses.

The main findings reveal that the potential determinants of NEET status are different when we distinguish NEETs by gender and by age. However, the results show the presence of a common effect between the four categories. In line with other socioeconomic studies (Bruno et al. 2014), the persistence of the NEET phenomenon over time characterizes a condition that feeds itself by progressively discouraging the affected groups, even though with different magnitudes. In all models, the coefficients on the lagged dependent variables ($NEET_{i,t-1}$) are positive and statistically significant at the 1% level (except among younger men, for whom the effect is weaker), but the highest coefficient (0.539) is associated with women NEETs aged 25-34. The presence of higher coefficients for women could reflect the traditional habit of self-distancing from the labor market that is still present among Italian women (ISTAT 2019).

The variables considered to be endogenous and mainly connected to the NEET condition offer interesting food for thought. The problem of employability is evident. Two aspects arise. First, the URs show stronger effects than the YURs, confirming that the NEET condition among young adults is more linked to unemployment (Contini et al. 2019), also due to the age for which employment support is usually no longer obtained (Tamesberger and Bacher 2014). Second, while the YURs by gender are similar, URs unexpectedly show a worse condition for men, probably influenced by the numerous interventions for triggering female employment in recent years, with the aim of both reducing gender gaps and promoting economic growth (e.g., Severini et al. 2019). On the effect of school dropout, our results confirm the OECD (2016) findings on the discontinuation of studies as a widespread problem especially among young men.

The analysis of the family background (*TERTIARY* and ln*GDP*) offers results that are lower than expected. Adult population education plays a role in driving the NEET condition among women, as adult education provides a model and guidance, and contributes to establishing a more competitive environment in terms of human capital. In synthesis, our finding confirms the positive relationships among education, labor opportunities and labor performance for women in the Italian economy (e.g., Addabbo and Favaro 2011), which also influence the NEET gender gap. Conversely, our second proxy for family background—the measure of average income—reduces NEET risk for young men only. As observed by Bruno et al. (2014), the male NEET rate has the greater responsivity to GDP variations. A greater income can provide support for young people's life conditions, reducing the risk of

becoming NEET by allowing greater opportunities and choices, such as the possibility of investing in better education (e.g., Quintano et al. 2018). The greater opportunities affect the continuation of studies, and as observed by Schnepf (2014), men tend to be more likely to abandon their studies before completion.

Regarding the effects of the use of ICTs, their role is limited, and the sign is unexpected. We notice a probable distortion in the use that young people make of new technologies so that instead of being useful for advanced studies as expected (consistent with the age range examined, see Valentín et al. 2013), the ICTs are useless or counterproductive.

The influence of known family commitments/roles strengthens the expected results. Younger women are pushed out of the job market and away from academic paths when they give birth early, while younger men are pushed away from NEET status as their age at marriage increases, i.e., when family formation is postponed. In this framework, women voluntarily leave the labor market after childbirth often due to the scarcity of public protection and aid[10] (Bratti et al. 2005). Our results show that these effects disappear among older NEETs.

The coefficients for *POVERTY* are positive and statistically significant for males in both age groups, confirming the stronger effect of poverty conditions on the male gender, from the deterioration of their social condition to difficulties finding work and criminal temptations (Kingston and Webster 2015). Considering the recessionary period analyzed, this suggests plausible effects of increased discouragement and the exacerbation of the NEET phenomenon.

5. Conclusions

We have investigated the different causes of the NEET phenomenon that could explain the large gender gap among adult NEETs beyond the traditional limitations of the labor market and social obligations.

Our results suggest to search among the few aspects that influence adult NEET women differently than other groups. These mainly include two factors: the first is what we could define as an economically inactivity status "trap", possibly linked to socioeconomic characteristics; the second factor

[10] Less-qualified women, or women with commitments related to maternity, tend to exclude themselves from the labor market due to the scarcity of supportive aid, especially in the poorest contexts (Andreotti et al. 2013).

concerns the enhancement of human capital in Italy, from which women would benefit most.

Regarding the first factor, we must make two clarifications arising from our results. (*i*) Although the effect of so-called family and/or social obligations is a well-known issue in Italy (Sunström 1999) that forces young women to exit from the labor market (Coles 2000), these obligations are not statistically relevant for women over 25 years of age. (*ii*) The presumed concern regarding female employability[11] is reduced. Anyhow, this issue has implications at a higher level, where the structural scarcity of job opportunities for Italian women (even those without children, see Del Boca 2002) add to the recessionary cycle that has already caused unemployment and a precarious labor market (Liotti 2020). The two features considered have in common the effect of pushing young people toward NEET status—and in our case they could affect young women—and becoming inactive at a young age increases the likelihood of remaining NEET (Ralston et al. 2021).

Regarding the second factor, women seem to be the only group that can take advantage of the enhancement of human capital. Such a result could be influenced by the fact that women are able to demonstrate better performance in many levels of education and training, and therefore they should be better performing in the knowledge economy (Walby 2010). This seems to be a decisive aspect on which policies to reduce the NEET gender gap could be based—i.e., political interventions to promote the spread of advanced education—if Italy were a "typical" advanced economy. Unfortunately, the fragile path of Italian development in terms of widespread innovation and education has contributed to shaping an economy that attributes relatively low importance to human capital and innovation (Nuvolari and Vasta 2015), suggesting that gender gaps (e.g., wage[12], unemployment) that would be reduced as a result of the spread of advanced education (Mussida and Picchio 2014) are unlikely to be affected in the short term.

Our age- and gender-based analyses may have other interpretations which in turn condition policy implications. We try to suggest interventions in two different phases and to outline, through the comparison between groups, whom support interventions should be directed to. We propose possible solutions to prevent and to take action on the problem.

[11] For example, the female employment rate exceeded 50% only in 2019 (on ISTAT data).

[12] Wage gaps in Italy also depend on workers' specialization and field of study, social norms, availability of childcare services (e.g., Piazzalunga 2018).

Some differences between groups may suggest how counteracting the problem at the origin. In our findings, we observe that young males are the group least at risk of having a persistent NEET status (being most endangered by negative economic trends). In contrast, women suffer from difficulties in exiting the NEET status; therefore, policymakers' objective should be to help young people avoid this negative condition as a first step to reduce the gap. However, a change in social roles (e.g., family commitments/roles related to early childbirth) does not seem easily achievable, as it is well rooted in Italian culture (Cutillo and Centra 2017). The classification of the subjects most involved in such roles could be a first step toward rethinking the female position in terms of their family responsibilities (Donà 2012). This suggests a first step for intervention to prevent the problem: scholastic and extracurricular supports for women, mainly linked to the opportunity to choose a professional career, must be targeted to women in economic difficulty who are less educated (and have fewer digital skills) and who have children. Such interventions could be a stimulus to reverse the low propensity to work related to Italian women, being the employment rate for women (53.8%) among the lowest in the EU28 (average of 68.2%, Eurostat 2019 data), trying to trigger positive effects on income levels and reducing inequality (Nieuwenhuis et al. 2020).

To correct the problem, we must consider that the situation among older female NEETs differs from that among males. The latter suffer from weaknesses during their youth, and unemployment and a lack of training/experience make it more difficult to exit the NEET condition over time (as observed by Rodriguez-Modroño 2019). Women in the older group are less afflicted by unemployment than older men, but are much more afflicted than young people. Our findings suggest that only a resolute intervention in the labor market could help all groups. However, the most plausible intervention clashes with the poor post-crisis recovery in Italy, also conditioned by the EU plans (Stability and Growth Pact) for fiscal consolidation (Karagounis et al. 2015) and for austerity measures that have curbed desirable post-crisis aid to the economy. The goal could be to increase efficiency a priori: policy actions could be undertaken by improving the competitiveness of young people and the integration between the labor market and the school system (Pastore 2015), consisting, e.g., in an assisted transition

toward job searches[13], consultants and professional training courses. To correct the problem, employment aid (compare with Tamesberger and Bacher 2014 on Austria) should therefore continue beyond the young age, and focus on the less competitive groups of people depicted: those who are beyond the usual age of education, those who have already been NEET, and those who risk further distancing themselves from the labor market (and not just those who have finished compulsory school).

Finally, we must consider that the discussed interventions targeted to adult NEETs would reinforce a positive trend toward reducing gender gaps that is already underway (Addabbo et al. 2015) and could possibly mitigate the disruptions due to the Great Recession.

Limits to this research concern the possibility of studying the diverse composition of NEETs, mainly those who are inactive and unemployed (OECD 2016) and the frequency and persistence of NEET status over time (see Kleif 2020); nevertheless, data availability limits this possibility. Of course, other limitations could be overcome through the integration of microdata with the direct motivations of the young people involved, but in this case, again, the availability of surveys that jointly offer this information restricts this option.

References

Acosta-Ballesteros J., Osorno-Del Rosal M.P., Rodríguez-Rodríguez O.M. (2017), *Gender differences in the quality of the school-to-work transition in Spain*, Applied Economics, 49(57), 5780-5791.

Addabbo T., Bastos A., Casaca S.F., Duvvury N., Ní Léime Á. (2015), *Gender and labour in times of austerity: Ireland, Italy and Portugal in comparative perspective*, International Labour Review, 154(4), 449-473.

Addabbo T., Favaro D. (2011), *Gender wage differentials by education in Italy*, Applied Economics, 43(29), 4589-4605.

Alfieri S., Sironi E., Marta E., Rosina A., Marzana D. (2015), *Young Italian NEETs (not in employment, education, or training) and the influence of their family background*, Europe's Journal of Psychology, 11(2), 311-322.

Almeida A.N.d., Simões F. (2020), *Professional development perspectives across gender and age groups of under-qualified rural NEETs*, Journal of Community Psychology, 48(5), 1620-1636.

[13] Women may have more difficulty during the school-to-work transition phase (see Acosta-Ballesteros et al. 2017, for Spain).

Andersson F.W., Gullberg Brännstrom S., Mörtvik, R. (2018), *Long-term scarring effect of neither working nor studying*, International Journal of Manpower, 39(2), 190-204.

Andreotti A., Mingione E., Pratschke J. (2013), *Female employment and the economic crisis*, European Societies, 15(4), 617-635.

Barbas M., Branco P., Loureiro A., Matos P. (2017), *NEETin with ICT*, Universal Journal of Educational Research, 5(4), 537-543.

Basta M., Karakonstantis S., Koutra K., Dafermos V., Papargiris A., Drakaki M., Tzagkarakis S., Vgontzas A., Simos P., Papadakis N. (2019), *NEET status among young Greeks: Association with mental health and substance use*, Journal of Affective Disorders, 253, 210-217.

Bell D.N.F., Blanchflower D.G. (2011), *Young people and the Great Recession*, Oxford Review of Economic Policy, 27(2), 241-267.

Blundell R., Bond S. (1998), *Initial conditions and moment restrictions in dynamic panel data models*, Journal of econometrics, 87(1), 115-143.

Bobba M., Coviello D. (2007), *Weak* instruments *and weak identification, in estimating the effects of education, on democracy*, Economics Letters, 96(3), 301-306.

Bontempi M.E., Mammi I. (2015), *Implementing a strategy to reduce the instrument count in panel GMM*, The Stata Journal, 15(4), 1075-1097.

Bradley S., Migali G., Navarro Paniagua M. (2020), *Spatial variations and clustering in the rates of youth unemployment and NEET: A comparative analysis of Italy, Spain, and the UK*, Journal of Regional Science, 60(5), 1074-1107.

Bratti M., Bono E.D., Vuri D. (2005), *New mothers' labour force participation in Italy: The role of job characteristics*, LABOUR, 19(s1), 9-121.

Bruno G., Marelli E., Signorelli M. (2014), *The rise of NEET and youth unemployment in EU regions after the crisis*, Comparative Economic Studies, 56, 592-615.

Bynner J., Parsons S. (2002), *Social exclusion and the transition from school to work: The case of young people not in education, employment, or training (NEET),* Journal of Vocational Behavior, 60(2), 289-309.

Cainarca G.C., Sgobbi F. (2012), *The return to education and skills in Italy*, International Journal of Manpower, 33(2), 187-205.

Carcillo S., Fernández R., Königs S., Minea A. (2015), *NEET Youth in the Aftermath of the Crisis: Challenges and Policies, OECD Social, Employment and Migration*, Working Papers, No. 164. OECD, Paris.

Caroleo F.E., Ciociano E., Destefanis S. (2017), *Youth labour-market performance, institutions and vet systems: A cross-country analysis*, Italian Economic Journal, 3, 39-69.

Castellano R., Rocca A. (2017), *The dynamic of the gender gap in the European labour market in the years of economic crisis*, Quality and Quantity, 51, 1337-1357.

Castelló-Climent A. (2008), *On the distribution of education and democracy*, Journal of Development Economics, 87(2), 179-190.

Choudhry M.T., Marelli E., Signorelli M. (2012), *Youth unemployment rate and impact of financial crises*, International Journal of Manpower, 33(1), 76-95.

Chung H., Bekker S., Houwing H. (2012), *Young people and the post-recession labour market in the context of Europe 2020*, Transfer: European Review of Labour and Research, 18(3), 301-317.

Coles R. (2000), *Changing patterns of youth transitions: Vulnerable groups, welfare careers and social exclusion*, In: J. Bynner, R.K. Silbereisen (Eds.), *Adversity and Challenge in Life in the New Germany and in England*. Houndmills, UK: Macmillan, 268-288.

Contini D., Filandri M., Pacelli L. (2019), *Persistency in the NEET state: A longitudinal analysis*, Journal of Youth Studies, 22(7), 959-980.

Cutillo A., Centra M. (2017), *Gender-based occupational choices and family responsibilities: The gender wage gap in Italy*, Feminist Economics, 23(4), 1-31.

Del Boca D. (2002), *Low fertility and labour force participation of Italian Women: Evidence and interpretations, OECD Labour Market and Social Policy*, Occasional Papers, No. 61, OECD Publishing, Paris.

Donà A. (2012), *Using the EU to promote gender equality policy in a traditional context: Reconciliation of work and family life in Italy*, In: Lombardo, E., Forest, M. (Eds.) *The Europeanization of Gender Equality Policies*. London: Palgrave Macmillan, 99-120.

Erdoğan E., Yentürk N., Akyüz A.A., Kurtaran Y., Yurttagüler L., Dursun K., Oy B. (2017), *Being a NEET in Turkey: Determinants and consequences*, POWER2YOUTH Working Paper No. 30.

France A. (2008), *From being to becoming: The Importance of tackling youth poverty in transitions to adulthood,* Social Policy and Society, *7*(4), 495-505.

Furlong A. (2006), *Not a very NEET solution: Representing problematic labour market transitions among early school-leavers*, Work, Employment and Society, 20(3), 553-569.

Giret J.-F., Guégnard C., Joseph O. (2020), *School-to-work transition in France: The role of education in escaping long-term NEET trajectories*, International Journal of Lifelong Education, 428-444, https://doi.org/10.1080/02601370.2020.1796835.

Gutiérrez-García R.A., Benjet C., Borges G., Ríos E.M., Medina-Mora M.E. (2017), *NEET adolescents grown up: Eight-year longitudinal follow-up of education, employment and mental health from adolescence to early adulthood in Mexico City,* European Child & Adolescent Psychiatry, 26, 1459-1469.

Gutman L., Sabates R., Schoon I. (2014), *Uncertainty in educational and career aspirations*. In: Schoon I., Eccles J. (Eds.), *Gender Differences in Aspirations and Attainment: A Life Course Perspective*, Cambridge: Cambridge University Press, 161-181.

Haché A., Dekelver J., Montandon L., Playfoot J., Aagaard M., Elmer S.S. (2010), *Research and policy brief on ICT for inclusion of youth at risk*, European Commission, JRC Technical Note 61705.

Hansen L.P. (1982), *Large sample properties of generalized method of moments estimators*, Econometrica: Journal of the Econometric Society, 50(4), 1029-1054.

Hoover-Dempsey K.V., Sandler H.M. (1997), *Why do parents become involved in their children's education?*, Review of Educational Research, 67(1), 3-42.

ILO (2015), *The future of work centenary initiative - Report of the Director-General - International Labour Conference*, 104th Session, Geneva.

ILO (2016), *World employment and social outlook 2016: Trends for youth*. International Labor Office, Geneva.

ILO (2017), *Global employment trends for youth 2017*. International Labour Office, Geneva.

Istance D., Rees G., Williamson H. (1994), *Young people not in education, training or employment in South Glamorgan*, South Glamorgan Training and Enterprise Council, Cardiff.

ISTAT (2019), *Il mercato del lavoro 2018. Verso una lettura integrata*. Istituto nazionale di statistica, Rome.

Karagounis K., Syrrakos D., Simister J. (2015), *The stability and growth pact, and balanced budget fiscal stimulus: Evidence from Germany and Italy*, Intereconomics, 50, 32-39.

Kingston S., Webster C. (2015), *The most 'undeserving' of all? How poverty drives young men to victimisation and crime*, Journal of Poverty and Social Justice, 23(3), 215-227.

Kirkup G. (2002), *ICT as a tool for enhancing women's education opportunities: and new educational and professional opportunities for women in new technologies*, United Nations, Division for the Advancement of Women, New York (UNDAW),

Kleif H.B. (2020), *The temporality of being NEET: A longitudinal study of NEET occurrences among young adults in Denmark*, *YOUNG*, 26(3), https://doi.org/10.1177/1103308820945098.

Liotti G. (2020), *Labour market flexibility, economic crisis and youth unemployment in Italy*, Structural Change and Economic Dynamics, 54, 150-162.

Lynch L.M., Richardson R. (1982), *Unemployment of young workers in Britain*, British Journal of Industrial Relations, 20(3), 362-372.

Maguire S., Cockx B., Dolado J.J., Felgueroso F., Jansen M., Styczyńska I., Kelly E., McGuinness S., Eichhorst W., Hinte H., Rinne U. (2013), *Youth unemployment*, Intereconomics, 48, 196-235.

Mascherini M., Salvatore L., Meierkord A., Jungblut J.M. (2012), *NEETs: Young people not in employment, education or training: Characteristics, costs and policy responses in Europe*, Publications Office of the European Union, Luxembourg, CID: 20.500.12592/2s03jt.

Mauro J.A., Mitra S. (2020), *Youth idleness in Eastern Europe and Central Asia before and after the 2009 crisis*, Applied Economics, 52(15), 1634-1655.

Mussida C., Parisi M.L. (2020), *Features of personal income inequality before and during the crisis: An analysis of Italian regions*, Regional Studies, 54(4), 472-482.

Mussida C., Picchio M. (2014), *The gender wage gap by education in Italy*, The Journal of Economic Inequality, 12(1), 117-147.

Nieuwenhuis R., Van Lancker W., Collado D., Cantillon B. (2020), *Trends in women's employment and poverty rates in OECD countries: A Kitagawa–Blinder–Oaxaca decomposition*, Italian Economic Journal, 6, 37-61.

Noh H., Lee B.J. (2017), *Risk factors of NEET (not in employment, education or training) in South Korea: An empirical study using panel data*, Asia Pacific Journal of Social Work and Development, 27(1), 28-38.

Nuvolari A., Vasta M. (2015), *The ghost in the attic? The Italian national innovation system in historical perspective*, *1861–2011*, Enterprise & Society, 16(2), 270-290.

Odoardi I. (2020), *Can parents' education lay the foundation for reducing the inactivity of young people? A regional analysis of Italian NEETs*, Economia Politica, 37, 307-336.

OECD (2016), *Society at a glance 2016: OECD social indicators*, OECD Publishing, Paris.

OECD (2020), *Education at a glance 2020: OECD indicators*, OECD Publishing, Paris.

Pastore F. (2015), *The European Youth Guarantee: Labor market context, conditions and opportunities in Italy*, IZA Journal of European Labor Studies, 4, 1-22.

Pesaran M.H. (2020), *General diagnostic tests for cross-sectional dependence in panels*, Empirical Economics, DOI: 10.1007/s00181-020-01875-7

Piazzalunga D. (2018), *The gender wage gap among college graduates in Italy*, Italian Economic Journal, 4, 33-90.

Pitkänen J., Remes H., Moustgaard H., Martikainen P. (2021), *Parental socioeconomic resources and adverse childhood experiences as predictors of not in education, employment, or training: A Finnish register-based longitudinal study*, Journal of Youth Studies, 24(1), 1-18.

Quintano C., Mazzocchi P., Rocca, A. (2018), *The determinants of Italian NEETs and the effects of the economic crisis*, Genus - Journal of Population Sciences, 74(5),1-24.

Rahman K.M. (2007), *NEETs' challenge to Japan: Causes and remedies*, Japanstudien, 18(1), 221-244.

Ralston K., Everington D., Feng Z., Dibben C. (2021), *Economic inactivity, not in employment, education or training (NEET) and scarring: The importance of NEET as a marker of long-term disadvantage*, Work, Employment and Society, 36(1) 10.1177/0950017020973882

Rodriguez-Modroño P. (2019), *Youth unemployment, NEETs and structural inequality in Spain*, International Journal of Manpower, 40(3), 433-448.

Ryan P. (2001), *The school-to-work transition: A cross-national perspective*, Journal of Economic Literature, 39(1), 34-92.

Sadiq A.M., Mohammed M. (2015), *The role of information and communication technology (ICT) in providing job opportunities for youth in*

the developing world, Journal of Emerging Trends in Engineering and Applied Sciences, 6(7), 174-179.

Scarpetta S., Sonnet A., Manfredi T. (2010), *Rising youth unemployment during the crisis: How to prevent negative long-term consequences on a generation? OECD Social, Employment and Migration*, Working Papers No. 106, OECD Publishing, Paris.

Schnepf S.V. (2014), *Do tertiary dropout students really not succeed in European labour markets?,* IZA Discussion Paper No. 8015.

Serracant P. (2014), *A brute indicator for a NEET case: Genesis and evolution of a problematic concept and results from an alternative indicator*, Social Indicators Research, 117(2), 401-419.

Severini F., Felici F., Ferracuti N., Pretaroli R., Socci, C. (2019), *Gender policy and female employment: A CGE model for Italy*, Economic Systems Research, 31(1),92-113.

Signorelli M., Choudhry M.T. (2015), *Symposium: Youth labour market and the "Great Recession"*, Economic Systems, 39(1),1-2.

Social Exclusion Unit (1999), *Bridging the gap: New opportunities for 16–18 year-olds not in education, employment or training*, London: Social Exclusion Unit.

Standing G. (2011), *The precariat - The new dangerous class*, London: Bloomsbury Academic.

Stanwick J., Forrest C., Skujins P. (2017), *Who are the persistently NEET young people?,* Literature overview support document. NCVER, Adelaide.

Sunström E. (1999), *Should mothers work? Age and attitudes in Germany, Italy and Sweden*, International Journal of Social Welfare, 8(3), 193-205.

Tamesberger D., Bacher J. (2014), *NEET youth in Austria: A typology including socio-demography, labour market behaviour and permanence*, Journal of Youth Studies, 17(9), 1239-1259.

Tanaka Y. (2020), *What prolongs the duration of NEET status for youth? Evidence from Japanese panel data,* International Journal of Economic Policy Studies, 14, 421-448.

Thompson R. (2011), *Individualisation and social exclusion: The case of young people not in education, employment or training*, Oxford Review of Education, 37(6), 785-802.

Valentín A., Mateos P.M., González-Tablas M.M., Pérez L., López E., García I. (2013), *Motivation and learning strategies in the use of ICTs among university students,* Computers & Education, 61,52-58.

Vancea M., Utzet M. (2018), *School-to-work transition: the case of Spanish NEETs*, Journal of Youth Studies, 21(7), 869-887.

Walby S. (2011), *Is the knowledge society gendered?*, Gender, Work & Organization, 18,1-29.

Wood D., Kaplan R., McLoyd V.C. (2007), *Gender differences in the educational expectations of urban, low-income African American youth: The role of parents and the school*, Journal of Youth and Adolescence, 36(4), 417-427.

Zellman G.L., Waterman J.M. (1998), *Understanding the impact of parent school involvement on children's educational outcomes*, The Journal of Educational Research, 91(6), 370-380.

Zuccotti C.V., O'Reilly J. (2019), *Ethnicity, gender and household effects on becoming NEET: An intersectional analysis*, Work, Employment and Society, 33(3), 351-373.