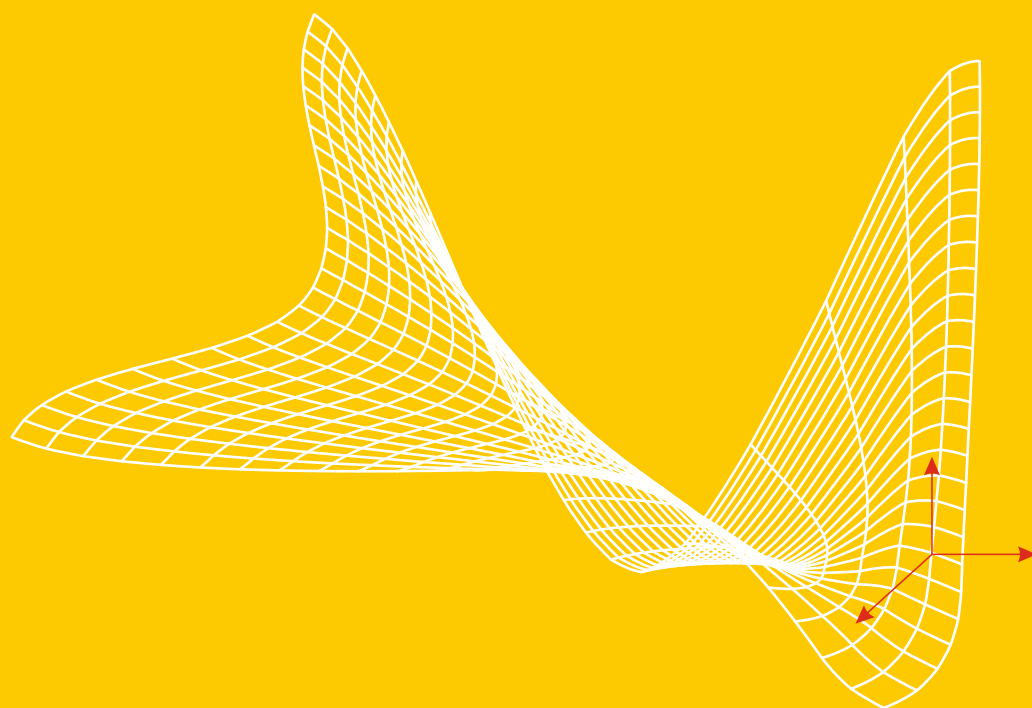


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Attitudes towards the risks of climate change: contributions from a Chilean exploratory case study

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Abstract:

Aim: The alteration of the planetary climate, mainly because of human activity, could trigger ecological, economic, and social impacts capable of disrupting the forms of life on the planet. In this context, the influence of psychosocial factors on the environmental awareness and the way in which these factors can for support pro-environmental behaviors is researched on the example of students from a Chilean university.

Design / Research methods: Transactional exploratory mixed research. Bibliographic review and application of a survey to the community of a Chilean university (n=134). The process consisted mainly of two stages: (1) literature review and (2) survey application.

Conclusions / Findings: The reviewed authors agree that people exhibit pro-environmental behaviors when they are sufficiently informed about environmental problems, have a favorable attitude towards them and can generate effective qualitative changes that do not cause significant difficulties later on. The results of the survey applied to the university sample show that the respondents can perceive the damage of global warming and have pro-environmental behaviors in greater proportion compared to the bibliographic data reviewed. The results are exploratory; however, they provide a focus for future research in this context.

Originality / Value of the article: This article offers an updated perspective on perceptions in relation to climate change and pro-environmental behaviors, based on the case study. Additionally, it offers a proposal for the intervention of university educational plans.

Keywords: global warming, pro-environmental behaviors, society, sustainability

JEL: I23, Q01, O44

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1. Introduction

Modern society faces the problem of alteration of the planetary climate which is almost certainly caused by human activity (The Intergovernmental Panel on Climate Change 2021). Climate change can trigger ecological, economic, and social processes capable of disrupting the forms of life on the planet (European Central Bank 2021). The models used by economists to predict the damage of global warming differ from those used by scientists, seriously underestimating the impact of this phenomenon on human habitability (Keen et al. 2022).

The European Union has become the leader regarding policies to face this challenge. However, recent international conflicts such as Russia's invasion of Ukraine, may negatively affect the implementation of policies, strategies to reduce the use of polluting sources and diversification of raw materials to produce clean energy, and addressing the causes and mitigating of the damage at a global level. The analysis of the annual reports of the International Monetary Fund (IMF) and the communications of its members, revealed a discrepancy between the support of these countries for the IMF initiatives to address the causes and solutions to climate change, versus their absence in the *communiqués* of the countries, revealing the lack of an agreement between these countries on how to address climate change (Dormido et al. 2022).

According to Caballero et al. (2007), without a change in attitude, in developed countries, pro-environmental policies will not materialize; therefore, becoming aware of the seriousness of the problem is crucial to moving towards change.

This article discusses the influence of psychosocial factors on people's environmental awareness, and how these factors could be used for change towards pro-environmental or sustainable behaviors. As García (2006) points out, "*knowledge of social attitudes towards climate change has an extraordinary value to respond with 'high-minded' strategies to the challenge that this environmental problem represents.*"

The aim is to discuss the topic by using the data obtained from the National Environmental Survey (Ministry of the Environment of Chile 2020) and the results of

the Environmental Awareness Survey, designed and applied on the university community (students, academics and employees).

Based on the results, guidelines are proposed for education in sustainability at the academic, community and business levels, as well as for the strengthening of cooperation and research networks, both at the University of Santiago of Chile and in its connection with the national and international environment. This contributes to the training of professionals as builders of sustainable environments; as well as the 2030 agenda for sustainable development, in accordance with the objectives of the 2020–2030 Institutional Strategic Plan.

2. Theoretical framework

2.1. Global climate change

Global climate change can be directly and/or indirectly attributed to human activity, in addition to the natural variability of the climate observed during comparable periods of time (Framework Law on Climate Change of Chile 2022). The scientific evidence has proven that since the beginning of the Industrial Revolution, the atmospheric concentration of carbon dioxide (CO₂) and other greenhouse gases (GHG) such as methane (CH₄) and nitrous oxide (N₂O), have increased appreciably because of the burning of fossil fuels, although other causes are also pointed out, such as the expansion of certain agricultural and livestock activities (IPCC 2013). The data in this regard offer no doubt that this effect has taken place, since according to the Fourth IPCC Report (2007: 30) the average temperature of the Earth has increased by 0.74 °C during the century from 1906 to 2005. Unlike other climatic changes, the current alterations are developing at a relatively fast pace. However, their main peculiarity lies in the agent that is originating them: man. Some effects of rising temperatures on physical and biological systems have already been documented (IPCC 2007: 31–33). Likewise, other impacts have been ventured that climate change could trigger in the future, both on a global scale and by large regional groups (IPCC 2007: 47–54). Although some of these effects may be beneficial for man, as is the case, for example, of higher agricultural yields in certain cold environments, the vast

majority will be counterproductive (Nelson et al. 2009). Thus, to mention only some of the impacts whose probability of occurrence is estimated at more than 90 percent, we can expect an increase in pests, a decrease in water quality, a reduction in the quality of life in hot areas and a higher risk of contracting infectious, respiratory, and skin diseases (Sanz, Galán 2020).

2.2. Adaptation to climate change

This concept refers to the action, measure, or process of adjustment to the current or projected climate or its effects on human or natural systems, to moderate or avoid damage, reduce vulnerability, increase resilience or take advantage of beneficial opportunities (Framework Law on Climate Change of Chile 2022).

Climate change constitutes a threat to the well-being of all humanity and must be confronted as soon as possible at all levels. In the case of Latin America, total emissions represent only 8.3% of global emissions, but, at the same time, the region is particularly vulnerable to the impact of climate change due to its geographic, climatic, socioeconomic, and demographic characteristics (CEPAL 2015).

Adaptation can reduce the risks of the effects of climate change, but its effectiveness is limited, particularly in the face of rapid or large changes. From a long-term perspective, and in the context of sustainable development, applying immediate adaptation measures can result in the selected options being more effective and having beneficial effects on the development process (IPCC 2014a). Faced with the already inescapable effects of climate change, Bárcena (2020), Executive Secretary of the Economic Commission for Latin America and the Caribbean (ECLAC), stated that one of the region's priorities must be “increasing resilience and the capacity to adaptation of society, as well as exploring the existing synergies between the adaptation processes and the other development objectives.”

In the case of Chile, the commitment before the UN was to decouple the growth of emissions, so that by 2030, the country's emissions are between 30 to 45% less, with respect to our GDP. Thus, the first steps were taken towards that green growth, low in carbon that promotes clean and renewable technologies that allow future generations to live better in a Chile of the future. This initiates a National Climate Change Action Plan 2017–2022 (PANCC-II), which is aimed at the effective

implementation of measures that have been identified to adapt to climate change, contributing to fulfill international commitments before the Framework Convention on the United Nations on Climate Change (UNFCCC).

The negative effect of the long drought in the country and the various initiatives for adaptation to climate change are highlighted. Among them, generating a decrease in the emission of local pollutants and a continuous increase in terrestrial protected areas, driven by urban wetlands.

2.3. Climate change mitigation

This term refers to the “Action, measure or process aimed at reducing greenhouse gases emissions and other climate forcings, or restricting the use of said gases as refrigerants, insulators or in industrial processes, among others, or to increase, avoid the deterioration or improvement of the state of the sinks of said gases, in order to limit the adverse effects of climate change” (Framework Law on Climate Change of Chile 2022).

Currently, numerous initiatives have been emerging that seek to deal with the threat. To a large extent, unlike what happens in other regions of the world, in Latin America and the Caribbean, adaptation is inseparable from mitigation and benefits, without exception, from the restoration of ecosystems, the recovery of soils, the recovery of the general, coastal, and riparian vegetation cover, and the positive impact on biodiversity (Marquet et al. 2019).

However, it is noted that many measures are of a technological nature, fundamentally aimed at reducing greenhouse gas emissions by replacing fossil energy sources and increasing energy efficiency. The 2021 State of the Environment Report explains Chile’s environmental performance, revealing 130 environmental performance indicators in matters of biodiversity, water, soil, waste, and climate change, among others.

Without denying the relevance of this type of action, it is unquestionable that mitigating and adapting to climate change are challenges that go beyond the energy sphere, so they will require much more than the replacement of some technologies by others. Complex problems demand complex solutions, so that the situation of historical urgency in which we find ourselves calls for a transition towards lifestyles

more in line with the laws of nature. To a large extent, the success of this change will depend on the ability of societies to mobilize individual and collective action, with everything related to the social perception of climate change acquiring decisive importance (Jori 2009).

2.4 Perception and attitudes of society to climate change

According to Jori (2009), the citizen's perception involves three aspects. In the first place, perceptual information allows climate change policies to be adapted to society's behavior patterns related to a great diversity of aspects that are significant for solving the problem: food, mobility, etc. Second, it is important to know how climate change is perceived to identify issues where there are gaps or erroneous popular beliefs. Only in this way will it be possible to determine what messages must be spread throughout society to clarify the most obscure issues or eradicate the most common mistakes. Finally, it is convenient to know the attitudes and opinions of individuals, because citizen knowledge, based fundamentally on lived experiences, can be very useful when defining effective policies against global warming.

The author concludes: "we must not underestimate or underestimate the knowledge that citizens have on this matter, since, on occasions, this cognitive capital could produce more fruitful results than those harvested up to now by technicians, scientists and politicians."

2.5 The environmental education?

Pro-environmental behavior or pro-ecological behavior (Corral-Verdugo 2001), is defined as "The set of effective and deliberate actions that result from the protection of natural resources or, at least, in the reduction of environmental deterioration." Such definition mainly included environmental behaviors oriented to the physical environment; however, later, in order to integrate physical and social aspects included in the understanding of environmental problems, the authors Corral-Verdugo and Pihneiro (2004) coined the term "Sustainable Behavior," defined as "A set of effective and deliberate actions that have as a purpose, the care of the natural and socio-cultural resources necessary to guarantee the present and future well-being of humanity."

Following the Corral-Verdugo (2001) definition, sustainable behavior should meet at least five characteristics:

- 1) Effectiveness implies responding skillfully to requirements or demands for care of the physical and social environment.
- 2) Deliberation means that the conduct must occur with the specific purpose or intention of caring for the social, economic, and environmental.
- 3) Anticipation, implies that, although the behavior is carried out now, the individual projects his action into the future.
- 4) Solidarity set of altruistic tendencies and actions deployed in response to concern for others, and,
- 5) Austerity, raises the need to deploy a lifestyle in which the consumption of goods and natural resources is limited to what is necessary, avoiding their waste.

Currently there is a vast research that seeks to predict determining factors of sustainable behavior, in this sense Álvarez and Vega (2009), after an exhaustive study of various authors, conclude that most agree that attitudes and the intention to act they have an important influence on behavior when other factors do not prevent it from taking place, especially with regard to individual behaviors of consumption and environmental participation.

By way of synthesis, Álvarez and Vega (2009) conclude that “in all of them it is stated that individuals only carry out environmentally responsible behaviors when they are sufficiently informed about the environmental problem, are motivated towards it and, in addition, are capable of generating qualitative changes, are convinced of the effectiveness of their action and that it will not generate significant difficulties.”

Despite the above and reviewing the data obtained in our survey, we can conclude that although social sensitivity towards the improvement and defense of the environment has increased, this increase is not reflected in specific behaviors. Coming to ensure that “a high awareness of the environment, by itself, does not ensure the implementation of responsible ecological behavior” (Puertas, Aguilar 2021).

Pedro Álvarez and Pedro Vega (2009) state that different authors agree that there are three groups of variables that determine the development of environmental

behavior (psychological, socio-cultural, and contextual). The factors were the following:

- *Contextual* (Corraliza, Berenguer 2000) such as relevance (Weigel, Newman 1976), the cost-benefit assessment of the action (Axelrod, Lehman 1993; Payne et al. 1992), the influence of advertising, the time elapsed between the assessment of attitude and behavior (Ajzen, Fishbein 1980), etc.
- *Psychosocial*, which refer to variables and representational, such as dispositional characteristics (Suárez 2000); values, such as anthropocentrism-ecocentrism (Thompson, Barton 1994), authoritarianism (Schultz, Stone 1994), etc., locus of control and degree of personal responsibility (Hwang et al. 2000; Santos et al. 1998), etc., which have been considered strong predictors of environmental attitude and, consequently, of environmentally responsible behavior (Grob 1995).
- *Sociodemographic*, such as gender, and others such as Zeleny et al. (2000), who review the works published in this regard between 1988 and 1998, considering age, level of education, religion, political ideology, socioeconomic status, place of residence, etc., whose influence on pro-environmental conduct is not conclusive, even offering contradictory results.
- *Cognitive*, referring to knowledge about the environment (Himes et al. 1986–87).

Álvarez and Vega (2009) found, because of a meta-analysis, that the variables associated with responsible environmental behavior focus on knowledge of problems, knowledge of action strategies, locus of control, attitudes, verbal commitment, and a sense of responsibility; some variables can be recognized in the National Environmental Survey in Chile (2020).

3. Methodology

To obtain an updated perspective on perceptions in relation to climate change and pro-environmental behaviors, a descriptive and mixed research approach was used in the perspective of Hernández Sampieri (2014). It consists of two stages: bibliographic

review and design and application of a survey to the community of a Chilean university (n=134 as of August 5, 2022). The methodological design was of the non-experimental, cross-sectional type, exploratory with an intentional sample, that is, applied in a specific university context in a single moment, without considering a control group.

The review was systematized through documentary analysis, hermeneutics, and content analysis. The methods used guided the analysis of the information collected through the academic search websites: Academia.edu, Google Scholar, Research and Redalyc, official sources such as ECLAC, IPCC and government agencies; To narrow the search, the keywords defined for this article were used: global warming, pro-environmental behavior, society, sustainability. The criteria for filtering the information obtained were its scientific value for this article and topicality; subsequently, they were classified by analysis categories using the same keywords (global warming, pro-environmental conduct, society, sustainability).

The elaboration of the survey consisted of three stages: definition of the variables of the instrument, design of the instrument and validation of the survey.

It began with the exploration of similar investigations carried out in the last 30 years, with scientific value for this article and within the parameters established in the keywords. This made it possible to identify that the dimensions closest to the national reality were those studied by Álvarez and Vega (2009): psychosocial, sociodemographic, and cognitive factors. The other factors were not considered, given the limited scope of the article. Regarding the definition of the variables, the degree of incorporation of pro-environmental behaviors in the daily context of people belonging to the community of a Chilean university was determined as a dependent variable. They are represented in the following Table 1:

Table 1. Definition of variables for survey design

Variable Name	Operational Definition	Variable type	Measurement form	Response type
Sociodemographic data	Sociodemographic data: age range, status (students, academics, civil servants)	Quantitative	Survey	Polytomous
Pro-environmental attitudes	Psychosocial factors, which refer to variables and representational, such as dispositional characteristics (Suárez 2000).	Qualitative	Survey	Polytomous
Perception of environmental problems	Psychosocial factors, which refer to variables and representations, such as anthropocentrism-ecocentrism (Thompson, Barton 1994), locus of control and degree of personal responsibility (Hwang et al. 2000; Santos et al. 1998).	Qualitative	Survey	Polytomous
Knowledge of sustainability topics	Cognitive factors: Knowledge of basic concepts in reference to the environment (Himes et al. 1986–87)	Quantitative	Survey	Polytomous

Source: authors' own elaboration.

The survey was reviewed by the team of teachers of the Social Responsibility and Sustainability subject regarding its coherence and cohesion. Given the scope proposed for this research, the institutional protocol for sending it to the university community

was followed, including consultation with the Ethics Committee. Finally, on June 14, 2022, it was officially distributed by the University's Department of Communications. As technological support, the Google Forms platform was used for its provision and hosting of results.

The instrument was structured in seven (7) questions and is made up of four (4) sections, with a single or multiple response option, depending on the question. The first corresponds to sociodemographic data (two (2) questions); the second to Perception of environmental problems (two (2) questions); the third to knowledge (one (1) question); and the fourth to pro-environmental attitudes (two (2) questions). For 26 days and until July 31, 134 responses were received: 43.6 % of officials; 26.3% academics and 24.1% students. The rest of the respondents self-assigned themselves in other categories such as: media agent, graduate/graduate, continuing education, etc.

To end the section, the main limitations of this research are pointed out:

- Security of the data of the respondents: which implied minimizing the questions that involved private information. Therefore, at the data level, it was only requested to indicate age range and status to which they belonged.
- Distortion of responses due to people's social desirability bias. However, Dominguez et al. (2012) propose to consider it a variable as such and "part of the psychic structure of the common individual that allows him to be sensitive to interaction with others and to adapt to a social environment."
- High demand for surveys: there is currently an excess requirement for online surveys aimed at the university community, of equal or greater relevance, which could have generated less interest in answering this survey.
- Theme: the topics addressed could affect the response rate, especially in people with a low level of training and digital literacy.

4. Results

To know the attitude that individuals have about the environment in Chile, were analyzed the results of the National Environmental Survey carried out by the Ministry of the Environment of Chile (2020). This survey was applied to 3,300 people, and its

objective was to characterize the environmental opinions of citizens, their environmental behaviors and their main environmental concerns.

The result of the survey shows that the problem that most worries the surveyed population is air pollution as the main environmental problem that affects them (32.8%), followed by garbage (29.7%), noise and water pollution (13.5%) and climate change (5.7%).

Regarding climate change, 100% of those surveyed consider that climate change is a phenomenon that is occurring; 71.4% believe that it is produced by human action, while 19.2% attribute it to natural processes and 7.2% attribute it to a combination of both phenomena.

When asked if they believe that Climate Change is a problem, 32.6% agree that “It is an urgent problem that we have to deal with today;” 29.4% favored the statement “It is not a problem yet, but it will be in the future;” 16.2% state that “It is an urgent problem, but there is nothing to do now” and 17.9% believe that “It is not a problem to worry about.”

Regarding the actions carried out in recent years to adapt to climate change, Table 2 shows that more than 50% have reduced their energy (54.2 %) and water (51.9%) consumption; followed by changes in diet (33.4%), in the way they dress (27.6%) and in their home (19.4%).

Table 2. Changes you have made in recent years to adapt to climate change

Decrease in energy use	54.2%
Reduction of water consumption	51.9%
Changes in diet	33.4%
Changes in the way of dressing	27.6%
Changes in the infrastructure of your home	19.4%
Occupation changes	6.5%

Source: National Environmental Survey (2020).

Regarding the perception of the effectiveness of the actions currently carried out by different actors, Table 3 shows the results considering a high assessment for scientists, NGOs, their own action and that of their environment, and the UN; instead, a negative perception for companies (large, medium and small) and the government and municipalities.

Table 3. Effectiveness of the different social actors perceived by the respondents

78.1%	He believes that scientists are quite a few and very effective
78.5%	Believes that NGOs are quite and very effective
72.6%	He believes that the action of himself and his immediate environment are quite and very effective
68.7%	Believes that international organizations (UN) are quite and very effective
46.1%	Believes that the actions carried out by large companies or industries are ineffective
38.2%	He believes that the actions carried out by the government and the municipalities are ineffective.
36.9%	Believes that the actions carried out by small and medium-sized companies are ineffective

Source: National Environmental Survey (2020).

In relation to non-pro-environmental personal habits, Table 4 summarizes those that the respondents recognize they still practice:

Table 4. Non-pro-environmental habits practiced by the respondents

58%	Does not compost organic waste
57%	Does not separate waste for recycling
33%	Do not buy used or second-hand products
29%	Do not buy products in bulk
27%	Throw away damaged clothing and shoes
20%	Does not choose products with minimum packaging
20%	Admits not to repair or give another use to things in disuse
18%	Get rid of damaged furniture

Source: National Environmental Survey (2020).

In relation to pro- environmental attitudes, Table 5 lists the habits practiced by the respondents:

Table 5. Pro-environmental habits practiced by respondents

61%	Use reusable bags for shopping
92.9%	Turn off or unplug electrical appliances you are not using
64.1%	Save water through water reuse, shorter showers, etc.

Source: National Environmental Survey (2020).

Regarding the results obtained in the survey prepared by the authors and applied in the university community between June 14 and August 5, 2022, 134 responses were obtained. In the following Table 6, the sample is characterized by status:

Table 6. Characterization of the sample by status

Status	Percentage
Officials	44%
Academics	26.1%
Students	23.9%

Source: authors' own elaboration.

Two important issues that we would like to highlight from the responses of the respondents are the following:

95%	They believe that climate change is a problem to be concerned about.
86%	They believe that the entire society should be concerned with mitigating the negative effects of climate change.

Regarding the personal pro-environmental habits that were consulted, Table 7 highlights those with the highest percentage declared by the respondents:

Table 7. Pro-environmental habits practiced by members of the university survey

79.5%	Recycle non-organic waste
34.8%	Compost organic waste
33.3%	Do not buy items that contain single-use plastic
18.2%	Use a bicycle to avoid increasing the carbon footprint

Source: authors' own elaboration.

To explore the use of concepts, it was asked if they recognize basic concepts such as: GHG, carbon footprint, water footprint, sustainability, and social responsibility.

Table 8. Recognition of environmental concepts

Response	Greenhouse gases	Sustainability	Carbon footprint	Water footprint	Social Responsibility
Yes	86%	94%	84%	60%	88%
No	1%	0%	1%	13%	1%
Vaguely	13%	5%	15%	25%	10%
Does not answer / does not know	0%	1%	0%	2%	0%

Source: authors' own elaboration.

Finally, the respondents were asked to propose other actions that could help mitigate Climate Change. On that item, 125 responses were obtained, which through content analysis were categorized into: environmental, technological, regulatory, attitudinal measures. The main ideas are mentioned below:

Environmental measures

- Reforest with native species
- Increase waste and wastewater recycling
- Compost

Technological measures

- Implement electromobility
- Digitize processes
- Encourage research and the use of clean technologies

Regulatory measures

- “Put a heavy hand” on large companies that pollute
- Update standards for the use of natural resources and atmospheric and noise pollution.
- Implement and monitor compliance with pro-environmental public policies.

Attitudinal measures

- Promote the vision of a society immersed in the natural environment.
- Raise people’s awareness, raise awareness, educate.
- Create incentives for the population to change destructive habits.
- Decentralize cities.

5. Discussion, conclusions, and recommendations

The results of this study should be considered exploratory, since it concerns a case study not being representative for pro-environmental perception or behavior at the university level. The research focuses on a specific institution with a particular organizational culture, and its results can be the basis for future research. The results can be used for policy development at the university research, and for adaptation of the curriculum.

The results obtained from the bibliographic review and the application of the survey show differences regarding pro-environmental behaviors in a national context versus a local one (university community). These results show that 95% of the people surveyed in the university community claim to be aware of the damage caused by global warming. This result could be attributed to the fact that people linked to higher education are immersed in an environment that constantly disseminates scientific articles, news, events through the various communication channels and is kept up to

date on environmental issues. In the ideas proposed by the respondents, the dominance of issues around clean energy is observed, they perceive the lack of regulation in companies and pro-environmental policies applied in society. Emphasis is placed on improving education and making people aware of how to change habits. Unfortunately, this response from a certain group tells us that it is necessary to transmit this awareness to other social groups, but it is still lacking.

On the other hand, these results could reflect the work that higher education institutions have developed to promote and encourage the involvement of their students in sustainable behaviors within the campus through programs integrated into their study plans, aimed at providing sufficient knowledge to encourage them to become sustainable citizens. An example is the Social Responsibility and Sustainability subject taught by a Technological Faculty to all its technology careers, where the professors encourage reflection and practical work to promote ethical and pro-environmental conduct in future professionals.

Considering the bibliographic review, the results presented and the experience of those who subscribe in the academic field, it is proposed to improve the effectiveness of educational plans considering the following aspects:

5.1. Knowledge and information on environmental problems

As cognitive determinants of environmental behavior in the literature, aspects such as knowledge and information about environmental problems, the actions that cause them and the mechanisms to avoid or correct them are considered. Numerous authors agree on the idea that environmental knowledge is an antecedent of people's behavior. McDonald (2014) studies pro-environmental behavior in the workplace, emphasizing the knowledge that workers must have to actively participate in recycling, waste management, energy saving or any other pro-environmental action. Garces et al. (2002), for their part, empirically show that greater individual knowledge about the environmental impact of waste implies a greater degree of participation in recycling. Jareño et al. (2012) argue that it is important to transmit environmental knowledge in childhood and adolescence and highlight the importance of family education and from other environments. Along the same line of argument, Krajhanzl

(2010) confirms that pro-environmental behavior can be based on prior knowledge of environmental science.

5.2. Attitudinal change

The fact of having a conceptual knowledge of a situation does not necessarily imply an attitudinal change and much less a behavioral one towards that situation, therefore, although it is necessary to inform the population, it is necessary to generate an attitudinal change. For Fischbein and Ajzen (1967, 1973, 1980), attitudes towards a certain behavior are a personal factor that includes the affective feelings of the individual, which can be positive or negative with respect to the execution of a specific behavior. They maintain that many of the behaviors of human beings are under voluntary control, so that the best way to predict a given behavior is the intention that one must perform or not perform said behavior. This intention will be based on two determinants: one of a personal nature (attitudes) and another that reflects social influence, which is defined as the person's perception of the social pressures that are imposed on them to carry out or not carry out a task. certain behavior (subjective norm). The authors also highlight that individuals perform a behavior when they have a positive attitude towards its execution and when they believe that what others think about what they should do is important. The "Model of Reasoned Action" (Fischbein, Ajzen 1980) conceives the human being as a rational animal that processes information or uses it systematically, that is how the subject is seen as a rational decision maker, who behaves based on the assessment it makes of the results of its behavior and the expectations it has about its behavior in relation to obtaining certain results.

Therefore, it is necessary to work on more than one variable:

1. The personal variable or individual attitude: clarifying concepts and generating a positive inclination regarding pro-environmental behaviors.
2. Social influence, or what others think about pro-environmental behaviors, using something as common today as social networks and influencers.
3. The evaluation of the results of their behavior. It is recommended that educational plans contemplate feedback on the achievements that are being achieved, for example reporting how many fewer tons of CO₂ are generated when using public

transport, so that the subject sees that their contribution is important in the macro figures, demonstrating that any extra effort that these actions mean, are valued as a contribution, even if they are minimal in relation to the benefit that is achieved.

3. Efficient behaviors

Along with informing, it is necessary to guide the population in terms of possible courses of action, in as much detail as possible, since, by modifying the attitude in favor of the environment, a feeling of impotence arises as they feel incapable of carrying out the appropriate behaviors (Uzzel et al. 1995), since they do not know how to act to solve the problems of which they have become aware.

Therefore, the favorable attitude towards pro-environmental conduct must be associated with the development of skills to act with sustainability criteria; that is, with the ability to use knowledge and skills in other contexts, both individually and collectively. This involves applying what has been learned to real-life situations. The most effective way to consolidate the knowledge learned and acquire sustainable habits will be by putting them into practice.

This implies the need for a new paradigm for the development of pro-environmental behaviors that could be expressed as the development of “training for action” (Breiting, Mogesen 1999). Well, for environmental education to achieve the commitment, motivation and, above all, the action and participation of individuals and groups in favor of sustainable development, it must provide them with three types of knowledge (Sauvé 1994, cited by Coron):

- 1) A know-how, which implies knowledge and information that allow people to know the complex nature of the environment and the meaning of sustainable development.
- 2) A knowing-being, which supposes the sensitization and awareness of society about the need to achieve a model of sustainable development and society, promoting, for this, the attitudes and values that imply sustainability.
- 3) Lastly and fundamentally, knowing-acting, that is, effectively mobilizing and combining individual resources (knowledge, procedures, and attitudes) and the environment (information, people, material, etc.), using critical capacity, to resolve some tasks that can be judged as complex.

In this context, in the University of Santiago of Chilean there is an initiative of the Faculty of Architecture, who emphasize promoting cultural change for waste

management and its recovery by modifying the way of relating them to waste. In many cases, this implies making them useful again, reducing the amount of garbage and understanding that “the materiality that surrounds us is transitory and we must know how to work with it” to develop new solutions to environmental problems. We hope that this initiative bears fruit and that there is a lasting change in the students.

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The impact of currency devaluation on non-oil exports in Africa

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Aim: This study assesses how devaluation in official exchange rate and change in relative prices influenced non-oil export in African countries for the period of 30 years (1991-2020) in 11 African countries (Nigeria, Burkina Faso, Burundi, Eswatini, Mauritius, Mozambique, Niger, Rwanda, Sierra Leone, Tanzania and Uganda).

Design/Research methods: This study utilized different estimators namely Mean Group, Pooled Mean Group as well as dynamic panel GMM methods. The major advantage of the MG estimator is that it is reliably efficient even in presence of weak cross-sectional dependence of the errors by estimating separate regressions to calculate coefficient means. Moreover, it applicability knows no bounds even when estimator for each individual country is weakly cross correlated. With a PMG estimator, a large scale individual panel heterogeneity in short-run responses is accommodated given homogenous long-run relations across countries.

Findings: The results of the panel co-integration suggest a long-run equilibrating relation amongst the variables in the study. This was validated on the basis of absolute t-value of 5.0781 under the t-bound. Our results for both MG and PMG estimators show significant negative devaluation and relative prices effects on non-oil exports in 11 African countries. The dynamic panel GMM results are robust and in agreement with the estimates of MG and PMG. From the results of cross-sectional analysis by country, results for countries revealed exchange rate devaluation had negative and significant impact on non-oil exports. Consequently, depreciation of the exchange rate has a short-run adverse effect on non-oil export due to high inelastic import dependence. Similarly, with exemption of Rwanda, and South Africa, the relative price effect was negatively significant for every other country in the study.

Originality: The originality is based on fact that the paper establishes both static and dynamic responses of non-oil export to devaluation in official exchange rate, relative prices, and foreign capital from trading partners in 11 African countries.

Limitations: It would be desirable to study 30 countries in Africa. We could not proceed with all countries due to inaccessibility of relevant data. Hence, caution should be taken in generalizing our findings.

Key words: exchange rate devaluation, relative prices, foreign capital, panel ARDL, African countries
JEL: C33, F13, F21

1. Introduction

The economically strongest countries in the world are also strong in aggregate export of goods and services. China, the United States of America and Germany export value was USD2.5 trillion, USD2.4 trillion, and USD1.3 trillion respectively in 2019 (WTO 2020). This corroborates findings of Marin (1992) that nations exporting huge share of their output grow faster than others (Bhagwati 1988). It has been argued that foreign trade is an engine of economic growth due to, e.g., taking advantage of specialization, comparative advantage, etc. (Ricardo 1817; Jones 2008).

Generally, export generates employment and supports the emergence of firms and industries supplying the export sector. Grossman and Helpman (1991) show that high volume of foreign trade leads to an increase in the amount of specialized inputs, which in turn intensifies output growth. The non-oil exporting sector in Africa is not developed very well, and underutilizes its capacity (Aku 2006). This problem is strengthened by the establishment of the variable exchange rate system, as the exchange rate volatility raised the risk of doing business with other country. The exchange rate volatility has a negative impact on international trade (McKenzie, Brooks 2017). Exchange rate regimes that allow for currency devaluation, increased taxation and hamper capital flow, are expected to have a negative on the volume of non-oil exports. While currency depreciation could lead to development of domestic output and exports, the threat are worsened by poor economic policy. As is shown in Table 1, the importance of non-oil exports is low in countries like Nigeria, Lybia, Angola and Algeria. The table provides an overview of the share of oil in total exports as well as the country's share in total exports from the African continent.

Non-oil export products can be categorized into (a) Agricultural commodities (b) Solid minerals, and (c) Manufactured products (Central Bank Africa 2001). The increasing exports of oil have led to a decrease in the share of these categories of products in total exports in a country like Nigeria. The first category of export products (groundnuts, rubber, and cotton) was Nigeria's main source of export earnings in the late 1960s and 1970s. In recent years, the exports of cashew nuts and cassava products to Europe and Asia amounted to more than \$4 billion. Due to increased export demand, the country saw a cassava crop revolution related to the

government's effort to increase the agricultural exports to improve economic development (Shah et al. 2015).

Table 1. Share of oil exports in total export, 2020

Country	Total Exports (\$)	% Share of all African exports
South Africa	16.7%	19.1%
Guinea	85%	13.4%
Nigeria	96%	9.6%
Algeria	96.1%	7.6%
Angola	95.6%	7.5%
Egypt	19.5%	5.6%
Morocco	16.5%	5.5%
Libya	96.8%	3.8%
Tunisia	28.4%	3.1%
Ghana	40.3%	2.5%

Source: World Trade Organization (2020).

Devaluation of the exchange rate means a decline in the value of the local currency relative to other currencies, authorized by the government. The devaluation of African currencies as an easing measure to improve exports and reduce imports seems not to have succeeded, as planned exports of non-petroleum commodities are still lagging to satisfy domestic economic consumers and the overwhelming abundance of imported products locks in competition. Furthermore, the economic crisis in Africa has undermined the relative effectiveness of currency devaluation. Reduced exchange rate and low capital flow have continued to serve as obstructions to the development of non-oil product exports. Strong foreign competition on national markets limit the development of production and export of non-oil commodities. Political mistakes and poor economic policy tend to strengthen this. In this context, the question is how the currency devaluation has hurt African exports. The ineffectiveness in exchange rate control in Africa reduces exportability of African non-oil commodities. The inadequacies in the control of exchange rate in Africa repeatedly drive devalued currency from other nations into the African market, reducing exportability of African non-oil commodities.

Against this background, our research questions are whether exchange rate devaluation influences non-oil export in Africa, whether relative export prices influence non-oil exports in Africa and whether foreign capital influence non-oil

exports in Africa. The main objective of this study is to evaluate the impact of exchange rate devaluation, relative prices and foreign capital flows on non-oil exports in Africa. We hypothesized that according to the J-curve effect, that devaluation will lead to a reduction in export earnings in the short-term. First, we will present the theoretical background and existing empirical research. This is followed by methods of data analysis, analysis of results and conclusions.

2. Theoretical background

The theoretical framework of this research is the J curve effect of currency devaluation. The J curve theory of devaluation (Mages 1973) explains the initial deterioration of a country's trade deficit that emanates from a depreciation of its currency. The basis for this theory is that in the immediate period of exchange rate depreciation or devaluation, costly imports still outweigh the benefits of declined volume of importation by the residents of the devaluing nation. Umoru (2022) noted that such depreciation worsens the trade balance in the short run as a result of the slow change in consumption of the now more expensive imported due to the lack of locally produced substitutes. In the long term, the trade balance improves due to the benefits cheaper exports. A series of empirical research has been carried out regarding the J-curve hypothesis, showing mixed evidence (Umoru, Eboreime 2013a).

The theoretical implication of the J-curve effect is that developing countries should export more than they import and most importantly, such exports should be highly competitive at the international market for a devaluation policy to achieve trade deficit reduction and improving the competitive advantage of the exporting country (Umoru 2022). In Africa a problem is monoculture and lack of diversification in exports (Umoru, Amedu 2022). Furthermore, non-oil commodities are rarely major export commodities of developing countries. For example, for Egypt, Nigeria, Gabon, Algeria, Angola, Libya, and Congo, oil and oil products remain one or two commodities that dominate aggregate commodity export. Only a handful of African nations have competitive advantage in their non-oil export commodities. These commodities include cotton, coffee, copper, iron ore exported by Chad, Ghana,

Zambia, and Mauritania respectively. These commodities majorly exported abroad are traded in the world market in American dollars rather than the local currency of each these African nations. In effect, the non-oil export items are not competitive in the global market and hence, foreign buyers do not find such goods as relatively cheaper. The combination of these effects on the purchasing power of the buyer could hinder the advantages of a devaluation policy in these countries.

Capital flows represent funds for investment, trade, and business operations. The flow of financial resources from one geographic area to another constitutes an influx of foreign capital. Foreign capital inflows include a wide range of financial transactions, such as loans from government and foreign institutions, short- and long-term bank loans, investments in public or private bonds, equity investments, and direct investments in production capacity (Oyatoye 2009). Foreign capital inflows (FCI) continue to be a driver of economic globalization in countries around the world (Khan 2007). FCI can trigger economic development in case of lack of domestic investment capital, when properly and effectively used. However, most developing countries have not seen significant growth in their gross domestic product (GDP) and suffer from severe external and domestic debt repayment problems, low living standards and extreme poverty (Khan 2007).

3. Empirical research

A number of studies have been carried out on determinants of non-oil exports. Ezike and Ogege (2012) reported negative effects of trade policies on non-oil exports in Nigeria. while the coefficient of the exchange rate was positive. Mauna and Reza (2001) investigated the effects of real exchange rates in Morocco, Algeria, and Tunisia. The overall result of the investigation revealed that exchange rate devaluation had positive effect on exports while exchange rate misalignment or variability had a negative effect. The authors specifically noted that all manufacturing sub-sectors of countries studied are sensitive to exchange rate changes with varying degree of responsiveness from one sector to another. Mauna and Reza (2001) investigated the effect of exchange advancement, real exchange scale unpredictability, and exchange

expansion in selected North African countries, including Morocco, Algeria, and Tunisia. The overall result of the investigation revealed that all manufacturing sub-sectors are reactive to exchange rate unpredictability, but the degree of response varies across sectors. Kandil (2004) investigated the effect of exchange rate fluctuations on real output growth in 22 developing countries. Based on the theory of rational expectations, it was found that devaluation of exchange rates reduces real output growth and cause an increase in price inflation. In other words, currency depreciation negatively affects the economic performance of developing countries

Akinlo and Lawal (2012) used a Vector Error Correction Model (VECM) to examine the effect of exchange rates on industrial production in Nigeria over the period 1986–2010. They reported that depreciation of the exchange rate did not have a noticeable effect on industrial production in the short term but had a positive effect in the long term. Aliyu (2011) argues that when exchange rate rises, imports increase and exports decrease, whereas when the exchange rate falls, exports expand and imports decrease. Moreover, currency depreciation tends to shift demand from foreign goods to domestic goods. Therefore, through changes in terms of trade, income is diverted from the importing country to the exporting country, which tends to affect the economic growth of both the exporting country and the importing country.

Dada and Oyeranti (2012) found no evidence of a direct relationship between exchange rate changes and GDP growth for Nigeria. It was concluded that Nigeria's economic growth is directly affected by fiscal and monetary policies and other economic variables, especially export growth (oil), which requires improved exchange rate management but is not enough to revive Nigeria's economy. According to Okafor et al. (2016) increase in foreign capital inflows leads to an increase in gross domestic product in Nigeria.

Adegboye et al. (2014) found that the disaggregation of capital flow and the gross domestic product is very important to the Nigerian economy. They found that, when compared to foreign capital indicators, foreign debt has the greatest impact on the Nigerian economy. Nkoro and Uko (2013) confirmed a positive and significant relationship between capital flow and gross domestic product. In contrast, Kolawole (2013) showed a negative relation between capital flow and the gross domestic product has a detrimental influence on Nigeria's real gross domestic product.

4. Methodology

According to the relative Purchasing Power Parity theory, the purchasing power of procurement intensity domestic money determines the terms of trade. Once the purchasing power of currency is equal in both trading countries, the volume and value of imports and exports balance. In this case, when a national currency is devalued by an amount equal to the inflation rate of trading partner, the currency maintains an equal purchasing power. Relative prices are determined as follows:

$$R_n = R_0 \times (P_{dn}/P_{do}/P_{fn}/P_{fo}) \quad (1)$$

Where R_0 , R_1 are exchange rates in the base and current years respectively, P_{a0} is the price index of domestic country in the base year, P_{a1} is the price index of domestic country in the current year, P_{b0} is the price index of foreign country in the base year, P_{b1} is price index of foreign country in the current year. This ratio measures the rate at which good I can be exchanged for good j, determining the volume of exports.

The study is analytical and econometrical, focusing on Africa. Both the Mean Group (MG) and Pooled Mean Group (PMG) estimators were utilized. The MG estimator derives the long-run parameters from the autoregressive distributed lag (ADL) model for each individual country by estimating separate regressions for each country as a cross section. The PMG estimator is a reparametrization of the unrestricted autoregressive distributed lag (ARDL) equation. This is specified as follows:

$$\begin{aligned} \Delta \ln n_{on_oil_exp ort}_{i,t} = & \delta_1 + ec(t-1) + \delta_2 \ln n_{on_oil_exp ort}_{i,t-i} \\ & + \delta_3 \ln f_{orncome}_{i,t-i} + \delta_4 \ln r_{elprices}_{i,t-i} + \\ & \delta_4 \ln e_{xchdeval}_{i,t-i} + \sum_{i=1}^p \gamma_1 \Delta \ln n_{on_oil_exp ort}_{i,t-i} \\ & + \sum_{i=1}^q \gamma_2 \Delta \ln f_{orncome}_{i,t-i} + \sum_{i=1}^q \gamma_3 \Delta \ln r_{elprices}_{i,t-i} \\ & + \sum_{i=1}^q \gamma_2 \Delta \ln e_{xchdeval}_{i,t-i} + \eta_i + e_{i,t} \end{aligned} \quad (2)$$

We also estimated Arellano and Bond's (1991) panel differenced-GMM model with the following specification:

$$\ln non_oil\ export_{i,t} = \delta + \phi \ln non_oil\ export(t-1) + \beta'(\ln\ forncome_{i,t}, \ln\ relprices_{i,t}, \ln\ exchdeval_{i,t}) + v_t \quad (3)$$

With a Z vector, the predictors of equation 3 namely $\ln\ forncome$, $\ln\ relprices$ and $\ln\ exchdeval$ are replaced as in equations 4 and 5 respectively. Equation 4 is a level equation while 5 is a differenced equation respectively.

$$\ln non_oil\ export_{i,t} = \delta + \phi \ln non_oil\ export(t-1) + Z_{i,t}'\beta + (\eta_i + \varepsilon_{i,t}) \quad (4)$$

$$\Delta \ln non_oil\ export_{i,t} = \delta + \phi \Delta \ln non_oil\ export(t-1) + \Delta Z_{i,t}'\beta + \Delta e_{i,t} \quad (5)$$

$$\text{Where } Z' = \begin{bmatrix} \ln\ forncome_{i,t} \\ \ln\ relprices_{i,t} \\ \ln\ exchdeval_{i,t} \end{bmatrix}$$

The GMM used by Blundell and Bond (1998), that is, sys-GMM uses the differences of the lag variables as instruments for the level equation and lags of variables at levels as instruments for the difference equation based on Eviews 10.0 specification. This is expressed by the following specification:

$$\begin{aligned} \ln non_oil\ export &= C(1) + C(2) * \ln non_oil\ export(-1) + \\ &C(3) * \ln\ relprices + C(4) * exchdeval @ d(\ln non_oil\ export(-2)) \\ &d(\ln\ forncome(-1))d(exchval(-1)) \\ d(\ln non_oil\ export) &= C(5) + C(6) * d(\ln non_oil\ export(-1)) + \\ &C(7) * d(\ln\ relprices) + C(8) \\ &\quad * d(exchdeval) @ (\ln non_oil\ export(-2)) \\ &\ln\ forncome(-1)(exchval(-1)) \end{aligned} \quad (6)$$

Where $C(2)$ or $C(6)$ is the coefficient of $\ln non_oil\ export(-1)$. The absolute value of this coefficient should be less than 1. The consistency of GMM is based on the model autoregressive (AR) correlation. In addition to the diagnostics test, the Sargan test was used to ascertain status of over-identification. The value should be less than 1 but greater than 0.05 for over-identification to be ruled out.

This study focuses on the historical period of thirty years (1991–2020). Relevant data could be generated for 11 developing African countries (Nigeria, Burkina Faso, Burundi, Eswatini, Mauritius, Uganda, Rwanda, Niger, Sierra Leone, Tanzania and Mozambique). The variables were transformed into natural log apart from variables

whose series are reported in percentages. Hence, our data were log-transformed to ensure stability of coefficient. The variables are presented in Table 2.

Table 2. Variable used in the study

Variable	Description	Source(s)
non-oilexport	Non-oil export of Goods and Services in US dollars	International Financial Statistics of IMF
Exchdeval	Percentage changes in exchange rates of local currencies per U.S. Dollar,	International Financial Statistics of IMF
Relprices	The relative prices was calculated as the ratio of domestic price of each African country to imported price	International Financial Statistics of IMF
forgncome	Foreign direct investment	International Financial Statistics of IMF

Source: authors' compilations.

5. Results

5.1. Unit root analysis

The panel unit root test is employed to investigate stationarity of panel series. Three tests of stationarity are used in this study to examine the variable in both panels, namely, Levin, Lin and Chu (LLC), Im, Pesaran and Shin W-t-stat (IPS), Hadri LM z-statistic. The results are presented in Table 3.

In the results, absence of no unit root could not be accepted for all variables, using the 3 methods of unit root tests implying the non-stationarity of the panel series at levels. Following, LLC (2002) and IPS (2003) that unit roots in heterogeneous panel data can be differenced at an appropriate difference level to obtain stationarity, the variables were subjected to first differencing. The results of the 3 panel stationarity test (LLC, Hadri-LM, and IPS) show that all variables are stationary after first difference, that is, $I[1]$. Given that series are $I(1)$, there is a need to examine their cointegration status to determine if they converge in the long run, and in particular the confirmation of the existence of a long-run equilibrium relationship among them.

Table 3. Unit root results

Variable	LLC		Hadri LM		IPS		Order of integration
	Adjusted t-statistic	Prob	z-statistic	Prob	W t bar statistic	Prob	
lnnon-oil export	1.2879	0.9384	23.5679	0.0000	-2.4690	0.5687	I(1)
D(lnnon-oil export)	3.4698	0.0000	4.87034	0.0267	5.8972	0.0000	
lnrelprices	0.2358	2.0000	56.779	0.0000	-1.7280	0.7823	I(1)
D(lnrelprices)	4.1872	0.0000	-26.531	0.0001	3.4986	0.0052	I(1)
exchdeval	0.5934	1.6782	-34.679	0.0000	-1.5376	0.4590	
D(lnexchdeval)	-9.3970	0.0000	21.568	0.0000	10.239	0.0000	I(1)
lnforgncome	-2.8547	0.2198	40.532	0.0000	0.5739	3.8920	
D(lnforgncome)	-6.7820	0.0000	2.0998	0.0072	-0.659	0.7391	

Source: authors' calculations.

5.2. GMM estimation

Due to the explicit requirement of the study for system panel GMM estimations, the system estimation was run without pre-diagnostic tests of pooled and fixed effects panel regression. Estimation results were found to be plagued with instrument proliferation, that is, too many instruments (lowest being 19 greater than number of cross sections-11) despite the switch of exogenous variables and the application of the collapse function. The insignificance of any of the predictor also confirmed the need to discard the model. As a result, the study tested the difference panel GMM model which had 11 instruments equal to cross-section. However, lagged value of money demand is lower than that of fixed effects coefficient showing downwards bias of the model. The study therefore, discards the GMM estimation models completely.

Table 4. Coefficients of lagged non-oil exports

Variables	System GMM	Differenced Panel GMM	Fixed Effects
Instruments	19	11	N/A
lnnon-oil_export (-1)	0.6296858	0.6296858	0.6861336

Source: authors' calculations.

5.3. Panel co-integration test

Having established that the panel series are characterized by unit-roots, and are integrated of order $I(1)$, a test for co-integration (convergence) is conducted. The results of the panel co-integration suggest strong evidence of a long-run equilibrating relation between exchange rate devaluation, relative prices, foreign income and non-oil export in African countries. This is true because the F-statistic, 10.6789 exceeds $I(1)$ F-bound at 5 percent significance level. The absolute t-value of 5.0781 also exceeds the absolute values of $I(1)$ t-bound. This further suggest a valid long-run equilibrating association amongst variables in the study.

Table 5. F-Bounds and t-Bounds test results

Test	Statistic	Critical Values	$I(0)$	$I(1)$
F-statistic	10.6789	5%	3.85	4.89
k	3			
Test	Statistic	Critical Values	$I(0)$	$I(1)$
t-statistic	5.0781	5%	-2.50	-3.46

Source: authors' calculations.

5.4. Panel results

In the light of the fact that the OLS results neglect or ignores the effect of heterogeneity associated with the individual countries and could cause substantial bias, the panel data estimation is carried out using the MG estimator, PMG estimators respectively of the panel ARDL equation and a system-GMM estimator. We could not conduct the Hausman test to choose between the M-G and PMG estimators because estimates from both methods had same signs. Hence, our decision was to analyse both results for non-oil export using same explanatory variables. We begin by presenting the M-G estimation of the relationship between non-oil export and exchange rate devaluation in addition to other control variables. This will help to provide a robust background for the study. Table 6 reports the results.

Table 6. Mean-Group estimates for non-oil export

Variables	Dependent Variable: lnnon_oil_export							
	Burkina Faso		Burundi		Mauritius		Eswatini	
	Coeff	t-value	Coeff	t-value	Coeff	t-value	Coeff	t-value
D(lnnon-oilexport(-1))	0.999	238.9***	0.123	8.900***	1.043	20.976** *	0.023	1.956*
D(lnrelprices)	-0.02	-2.394**	-0.034	-4.109***	-0.013	-3.865**	-0.015	-2098**
D(exchdeval)	-1.034	-0.350	-1.062	-2.350**	-0.051	-4.097***	-1.356	-10.026***
D(lnforgncome)	0.049	11.095** *	0.172	19.061***	0.019	7.032***	0.022	16.79***
adjustment speed	-0.201	120.56** *	-0.239	10.006***	-0.312	2.036**	-0.216	120.56***
lnrelprices	-1.076	-2.009**	-0.024	-0.011	-0.055	-2.096**	-1.000	-3.221**
exchdeval	-1.032	- 14.780** *	-0.0415	-13.060***	-0.008	-1.004	-0.687	-5.008***
lnforgncome	0.028	19.651** *	0.013	10.248***	0.004	19.651** *	0.028	19.651***
c	1.246	3.478***	0.934	13.563***	0.038	9.487***	0.372	2.435**
Variables	Mozambique		Niger		Nigeria		Rwanda	
	Coeff	t-value	Coeff	t-value	Coeff	t-value	Coeff	t-value
D(lnnon-oilexport(-1))	0.221	2.436**	1.035	3.799***	0.156	14.290** *	0.268	5.006***
D(lnrelprices)	-1.034	-0.845	-0.250	-2.549**	-0.013	-2.903**	-0.005	-12.034***
D(exchdeval)	-0.087	- 40.987** *	-0.087	-2.089**	-1.679	-13.120** *	-0.041	-9.330***
D(lnforgncome)	0.012	1.091***	0.013	1.1234	0.001	0.134	0.146	51.243***
adjustment speed	-0.310	9.860***	-0.250	70.58***	-0.235	5.435***	-0.270	20.681***

Table 6. Cont...

lnrelprices	-0.056	-12.09**	-0.026	-0.023**	-0.156	-9.556***	-1.987	-2.468**
exchdeval	-0.192	- 4.098** *	-1.004	-6.898***	-0.087	- 7.092** *	-0.034	-17.098
lnforgncome	1.169	5.870** *	0.098	4.087***	1.011	10.910* **	0.010	0.740
c	1.048	2.456**	0.234	3.400***	1.204	12.856* **	0.387	1.348
Variables	Tanzania		S. Leone		Senegal			
	Coeff	t-value	Coeff	t-value	Coeff	t-value		
D(lnnon-oilexport(-1))	1.075	5.049** *	0.901	23.092***	1.573		8.099***	
D(lnrelprices)	-0.134	- 9.004**	-4.135	-0.203	-0.027		-3.094**	
D(exchdeval)	-1.022	-0.740	-1.000	-2.997**	-1.011		-19.240	
D(lnforgncome)	0.055	2.976**	0.0256	1.009	0.0287		7.001***	
adjustment speed	-0.430	2.051**	-0.0135	12.436***	-0.290		12.833***	
lnrelprices	-0.708	- 2.458**	-0.065	-2.009**	-0.019		-2.540**	
exchdeval	-1.032	-11.280	-0.076	-13.458***	-0.072		-10.620	
lnforgncome	0.011	10.251* **	0.0123	2.098**	0.053		3.051***	
c	0.635	90.467* **	1.234	5.489***	0.0374		2.354**	
***(**) designates significance at 1% & 5% levels respectively								

Source: authors' calculations.

The first lag of non-oil export is positively related to current export and passes 1% significant level, a suggestion that current level of non-oil export significantly depends on its previous value. As such, the higher the value of non-oil export in the previous period, the higher its value in current and future periods. A 1% percent rise in previous non-oil export raises current/future non-oil export capacity by 0.99%. Foreign Direct Investment (FDI) FDI is significant and positive for all countries except Rwanda and Sierra Leone. An implication that inflow of foreign capital and investment resources had a stimulating impact on non-oil export in Burkina Faso, Burundi, Mauritius, Eswatini, Tanzania, Mozambique, Niger, Nigeria, and Senegal.

This finding supports the evidence by Kolawole and Okodua (2010) and is opposed to the findings by Ezike and Ogege (2012). A 1% percent increase in FDI induces non-oil export growth by 0.044%. In accordance with theory, relative prices had a statistically significant coefficient at a 5% level of significance that is negatively signed for all countries. The same result was obtained for exchange rate devaluation.

Exchange rate devaluation is negatively signed, for all countries in deviation to extant trade theory as regards the relation between exchange rate depreciation and export. However, the negative effect was not significant. Indeed, non-oil export effects of exchange rate devaluation are significant in all countries except for Burkina Faso. This implies that devaluation in African countries is not successful. In many of these countries, the ml condition is none existent. This may imply that devaluation against the American dollar leads to increased expenditure of foreign goods, reducing income spent on locally produced goods. Accordingly, as demand for foreign goods increases, local producers in Africa are affected. In the long run, local production decreases and foreign exchange earnings from exports is lowered as a consequence. In effect, devaluation of the exchange rate had no significant impact on output due largely to the export of primary products that are subjected to extreme external negative shocks and terms of trade deterioration, unlike manufactured goods. The finding corroborates the findings of Dada and Oyeranti (2012) and contradict the results of Aliyu (2011). Only twenty percent of disequilibrium in non-oil export from African countries was rightly restored annually following some short-run disturbances.

5.5. Mean-group (PMG) results

The results of the PMG are reported in Table 7. The PMG estimates are similar to those of MG. The adjusted R^2 of 0.847, implies that over 84 percent of the net systematic variations in non-oil export in Africa is explained by the independent variables. This is an indication of a good predictive ability of the model. The F-value of 161.6, with a corresponding prp-value of 0.000 is significant at the 1 percent level, thus validating actuality of a significant linear association between regressors and non-oil exports in Africa. The DW statistic of 2.21, approximated to 2, in line with

the rule of the thumb, suggests that there is autocorrelation in the model. The estimated model is, therefore, fit for policy purposes.

Table 7. Mean group (PMG) results

Dependent Variable: lnnon_oil_export			
Variable	Coefficient	t-ratios	p-value
C	3.021367	19.32318	0.0000
D(lnnon-oilexport(-1))	0.627966	34.71347	0.0000
D(lnrelprices)	-0.003808	-0.173036	0.8626
D(exchdeval)	-1.09E-05	-1.056775	0.2908
D(lnforgncome)	1.082E-05	9.326834	0.0000
adjustment speed	-0.21940	-20.6985	0.0000
lnrelprices	-0.01297	-2.4579	0.0256
exchdeval	-1.0098	-1.056775	0.2908
lnforgncome	0.95214	6.7922	0.0000
R ²	0.851976		
Adj. R ²	0.846687		
F-statistic (Prob)	161.0661 (0.00000)		
Durbin-Watson stat	2.214026		

Source: authors' calculations.

The first lag of non-oil exports has a positive sign and statistically significant at a 1 percent level. Thus, past non-oil export p tend to drive successive levels of non-oil exports, particularly in the case of manufacturing, industrial and investment sectors, where such positive effects are sustained. Relative prices and exchange rate are positively though not significant related to non-oil exports, apparently due to the weak capital flows and non-diversified export base of African countries. This finding supports the results of Olayiwola and Okodua (2015). With PMG equation, twenty two percent of disequilibrium in non-oil export from African countries was restored annually following some short-run disturbances. This is similar for the adjustment speed of the M-G estimator.

Coefficient confidence interval estimates are reported in Table 8. The results of the confidence interval indicate that the estimates fall within the 90–99% confidence level. Invariably, the results obtained fall within a high range of confidence that shows their reliability and assurance.

Table 8. Coefficient confidence interval

Variable	Coefficient	90% CI		95% CI		99% CI	
		Low	High	Low	High	Low	High
lnrelprices*lnnon_oilexport	0.1814	0.170621	0.19295	0.168	0.194	0.164	0.98440
exchdeval*lnrelprices	5.710	-3.50E-07	0.0012	-1.4E-05	0.002	-3.29	0.0002
lnforgncome*lnnon_oilexpt	0.0344	0.9021	0.1054	0.238	0.928	0.224	0.21110
exchdeval*lnlnnon_oilexpt	0.1082	0.1722	0.101	0.029	0.102	0.054	0.810

Source: authors' calculations.

Before analyzing the results of the panel ARDL model, the model selection criteria, which choose the optimal lag length of the model is presented in Table 9.

Table 9. Model selection criteria

Model	LogL	AIC*	BIC	HQ	Specification
3	3252.548733	-3.399250	-2.449526*	-3.048030	ARDL(2, 1, 1)
1	3169.946135*	-3.373210*	-2.612173	-3.091769*	ARDL(1, 1, 1)
4	3342.062128	-3.364127	-2.037030	-2.873349	ARDL(2, 2, 2)
2	3264.294746	-3.343658	-2.205247	-2.922659	ARDL(1, 2, 2)

Source: authors' calculations.

From the table it can be seen that the Akaike information criterion (AIC), BIC and HQ and the Hanan-Quinn Information criterion (HQ) all selected lag order two, respectively. Thus, the optimal lag length for the model is 1 with ARDL (1,1,1) specification.

5.6. Panel error correction results

The results of the short-run dynamics (error-correction model), which shows the response of non-oil exports to each regressors, as well as the error-correction mechanism, are presented in Table 10.

Table 10. Error correction model based on ARDL (1, 1, 1)

Variable	Coefficient	t-Statistics	p-value
c	1.652658***	5.672419***	0.0000
dl _{non_oilexport} (-1)	0.056312	1.449386	0.2579
dl _{relprices}	-1.733139	-17.002250***	0.0000
dl _{nexchdeval}	-1.21E-05	-11.004976***	0.000
dl _{neforgncome}	0.056312	0.9756	1.2475
adjustment speed	0.20857***	-3.47618***	0.0000

Source: authors' calculations.

An examination of the results shows a lagged positive effect of non-oil export on current non-oil export, implying a positive relationship between past values of non-oil export and current/future values of non-oil export in African countries. A percent increase in past non-oil export is associated with a 0.056 unit percent increase in current non-oil export. Relative prices are negatively and significantly related to non-oil export as earlier reported at a 5% level of significance. The FDI coefficient (0.0563) is insignificant. The observed relationship does not corroborates evidence from Ekperiware (2009), Kolawole and Okodua (2010) and Olayiwola and Okodua (2015).

The short-run effect of devaluation in official exchange rate on non-oil export is negative and significant. Consequently, depreciation has a short-run adverse effect on non-oil export due to high inelastic import dependence. The result supports evidence from previous findings of Arise et al. (2002), Kandil (2004) and contradicts the research findings of Akinlo and Lawal (2012), Dada and Oyeranti (2012) and Mukherjee and Pozo (2011). The error-correction coefficient is negative and

statistically significant, in line with theory. Thus, it plays the role of restoring equilibrium in the event of temporary disequilibrium from long-run stability. The coefficient of 0.208 indicates that the adjustment/restoring capacity after a short-run perturbation is approximately 21%.

5.7. Short-run interaction model

The results of the interaction model are presented in Table 11.

Table 11. Interactive model results

Variable	Coefficient	t-Statistics	p-value
c	0.201057***	3.392472	0.0007
d(lnnon_oilexport(-1))	0.039867	10.938787	0.0000
d(lnrelprices*lnnon_oilexport)	0.108809***	6.636769	0.0000
d(lnrelprices(-1)*lnnon_oilexport(-1))	0.000892	0.114964	0.9085
d(exchdeval*lnrelprices)	-0.001914**	-2.521895	0.0018
d(exchdeval*lnforgncome(-1))	-5.59E-05	-0.446097	0.6556
adjustment speed	0.206286***	-3.323651	0.0009

Source: authors' calculations.

The results of the pair of interactions show that the interaction of relative prices and non-oil export has a positive and significant effect on African economies, with a marginal effect of 0.11. The interaction between exchange rate devaluation and relative prices produces a statistically negative marginal impact of - 0.0019. This implies that when the exchange rate depreciates in the presence of high relative prices, non-oil export declines by an additional amount of 0.0019%.

5.8. Long run equation results

Results of corresponding long-run equation model are reported in Tables 12 and 13.

Table 12. Long-run model results

Variable	Coefficient	t-Statistics	p-value
lnrelprices	-0.056480***	-8.110423	0.0000
lnexchdeval	- 7.36E-07	-1.63589	0.1021
lnforgncome	1.002390***	9.63528	0.0000

Source: authors' calculations.

From the tables, quite insightful results emerge as both the coefficients of relative prices and exchange rate devaluation are positively related to non-oil exports. Foreign gross domestic product has a negative and significant effect on non-oil export in Africa in the long run. This seems to stimulate the fact that such FDI is a source of capital inflows. By implication, investment capital constitutes an integral aspect of non-oil export diversification. The result is in line with the findings of Okafor et al. (2016) and Vincent (2017).

Table 13. Interactive long-run model results

Variable	Coefficient	t-Statistics	p-value
lnrelprices*lnnon_oilexport	0.181458	27.56038	0.0000
exchdeval*lnrelativeprices	5.71E-05	1.635891	0.1621
Lngdpnon_oilexport*lnexchdeval	-1.9894	3.7580	0.0001

Source: authors' calculations.

The results of the long-run interaction model show that the interaction of relative prices and non-oil export has a positive and significant effect on non-oil export, with a marginal impact of 0.18%. The long-run impact of the interaction between exchange rate devaluation and non-oil export, although positive, is not significant. The t-value

is greater than 2, which implies that accounting for non-oil exports in presence of official devaluation in exchange rate movement in African countries negatively and significantly impact on non-oil export.

5.9. Country specific results

The country specific estimates are shown in tables 14–25.

Table 14. Panel ARDL results – Burkina Faso

Variable	Coefficient	t-Statistics	p-value
ect	-0.020112	-33.87576	0.0001
d(lnnon_oilexport(-1))	0.063234	1.866793	0.1588
d(lnrelprices)	-0.048948	-18.96776	0.0003
d(exchdeval)	-1.1275	-619.7399	0.0000
d(forgncome)	0.08736	2.56344	0.0012
c	0.17402	4.380432	0.0220

Source: authors' calculations.

Table 15. Panel ARDL results – Burundi

Variable	Coefficient	t-Statistics	p-value
ect	0.150280	-19.58214	0.0003
d(lnnon_oilexport(-1))	0.168291	5.375926	0.0126
d(lnrelprices)	-1.588658	-1.971625	0.1432
d(exchdeval)	-0.01690	-248.2713	0.0000
d(forgncome)	0.0085	0.12470	0.93742
c	1.139791	2.504606	0.0874

Source: authors' calculations.

Results for Burkina Faso (Table 14) reveal that capital flows and exchange rates have a positive and significant impact on non-oil exports. The results also show

responsiveness to long-run equilibrium as a result of contemporaneous short-run disequilibrium.

Results for Burundi (Table 15) show that the lag of non-oil exports and exchange rate are negatively and significantly related to current non-oil export. The error correction term is appropriately signed and significant. Thus, it rightly plays the role of restoring equilibrium in the event of short-run (temporary) deviation/disequilibrium from the long-run equilibrium.

Table 16. Panel ARDL results – Mauritius

Variable	Coefficient	t-Statistics	p-value
ect	-0.047874	-31.50087	0.0001
d(lnnon_oilexport(-1))	0.158361	23.37263	0.0002
d(lnrelprices)	-0.212673	-1.150383	0.3334
d(exchdeval)	-0.002463	-0.389488	0.0000
d(forgncome)	0.09673	1.903354	0.0356
c	0.389488	3.942393	0.0291

Source: authors' calculations.

The panel ARDL on Mauritius (Table 16) reveal that lagged non-oil export has a positive and significant effect on current non-oil export, while relative prices and exchange rate depreciation exert a non-significant impact on non-oil exports of Mauritius. A 1% increase in previous non-oil export increases current non-oil export by 0.15%. The result is at variance with the A-priori sign unlike the case of Burundi. The error correction coefficient is also appropriately negative and significant, indicating the capacity for the restoration of long-run equilibrium after a temporary deviation/shock.

The ARDL result for Niger (Table 17) show that lagged non-oil export exerts a positive and non-significant impact on current non-oil export. Relative prices exert a positive and significant impact, while the exchange rate devaluation had a negative and significant effect on non-oil export. The co-integrating coefficient indicates restoration of 3% long-run equilibrium after a temporary deviation.

Table 17. Panel ARDL results – Niger

Variable	Coefficient	t-Statistics	p-value
ect	0.033008	48.63386	0.0000
d(lnnon_oilexport(-1))	0.127850	1.630699	0.6190
d(lnrelprices)	-0.022656	-20.36138	0.0003
d(exchdeval)	-1.27E-06	-33100.12	0.0000
d(forgncome)	0.000679	10.09451	0.0000
c	-0.222468	-7.043222	0.0059

Source: authors' calculations.

Table 18. Panel ARDL results – Nigeria

Variable	Coefficient	t-Statistics	p-value
ect	-0.096357	-90.29238	0.0000
d(lnnon_oilexport(-1))	0.120956	4.495380	0.0205
d(lnrelprices)	-0.036566	-2.631707	0.0782
d(exchdeval)	-0.000457	-2818.321	0.0000
d(forgncome)	1.01390	5.712403	0.0000
c	0.720230	12.15946	0.0012

Source: authors' calculations.

The panel ARDL result for Nigeria (Table 18) show that lagged non-oil export exerts a positive impact on current non-oil export, as in the case of Niger. In the same vein, relative prices and exchange rate movements have negative and significant effects, confirming the detrimental impact of the destabilizing high domestic-foreign price ratio and exchange rate depreciation on non-oil-export. The error correction term is appropriately signed and significant, indicating the capacity of the model to restore to long-run equilibrium after a temporary deviation/shock.

Table 19. Panel ARDL results – Rwanda

Variable	Coefficient	t-Statistics	p-value
ect	0.246665	30.28693	0.0001
d(lnnon_oilexport(-1))	-0.334091	-5.137654	0.0143
d(lnrelprices)	0.063290	83.23786	0.0000
d(exchdeval)	-2.66E-05	-43102.98	0.0000
d(forgncome)	0.00015	1.30945	0.7849
c	-1.840787	-4.087814	0.0265

Source: authors' calculations.

In the case of Rwanda (Table 19), the panel ARDL results show that lagged non-oil export and exchange rate export have negative and significant impacts on non-oil export, while relative prices exert a positive and significant impact. The error correction 24.6% speed of non-oil export adjustment to long-run balance.

Table 20. Panel ARDL results – Sierra Leone

Variable	Coefficient	t-Statistics	p-value
ect	-0.258128	-23.30425	0.0002
d(lnnon_oilexport(-1))	0.511281	-23.35755	0.0002
d(lnrelprices)	-1.709785	-2.570922	0.0124
d(exchdeval)	-0.000489	-2954.636	0.0000
d(forgncome)	0.09835	1.029847	0.09472
c	2.029832	2.913833	0.0618

Source: authors' calculations.

For Sierra Leone (Table 20), the panel ARDL results show that lagged non-oil export impacted positively on current exports and exchange rate devaluation have negative and significant impacts on non-oil export, whereas relative prices had a

negative and significant impact. The error correction 25.8% speed of adjustment of non-oil export to long-run stability.

Table 21. Panel ARDL results – Senegal

Variable	Coefficient	t-Statistics	p-value
ect	-0.358540	-10.86771	0.0017
d(lnnon_oilexport(-1))	0.169102	5.101058	0.0146
d(lnrelprices)	-1.047458	-0.088759	0.9349
d(exchdeval)	-0.017135	-6.403724	0.0077
d(forgncome)	0.01001	2.36081	0.0013
c	2.752179	1.360582	0.2668

Source: authors' calculations.

For Senegal (Table 21), the panel ARDL results show that lagged non-oil export has a positive and significant impact on current non-oil export, whereas the exchange rate depreciation had a negative and significant impact. Relative prices are negatively related to non-oil export, and the effect is insignificant. Evidence of a significant adjustment/restoring process to long-run equilibrium after a temporary shock/deviation is found.

Table 22. Panel ARDL results – Estwatini

Variable	Coefficient	t-Statistics	p-value
ect	-0.270057	-69.27967	0.0000
d(lnnon_oilexport(-1))	0.121965	5.856957	0.0099
d(lnrelprices)	-0.126932	-74.52458	0.0000
d(exchdeval)	-0.000609	-1825.007	0.0000
d(forgncome)	-0.0113	-1.2458	0.9236
c	1.846287	10.21803	0.0020

Source: authors' calculations.

The panel ARDL results for Eswatini (Table 22) reveal a positive and significant effect of lagged non-oil export on current non-oil export, while relative prices and exchange rate both exert negative and significant impacts. Invariably, the short-term destabilizing and volatile impact of prices, as well as exchange rate depreciation for an economy characterized by high import-dependence tend to be detrimental to non-oil export, particularly agriculture, trade, and the industrial sector, which are key to economic diversification in non-oil export. Evidence of a significant adjustment/restoring process to long-run equilibrium after a temporary shock/deviation is found.

Table 23. Panel ARDL results – Tanzania

Variable	Coefficient	t-Statistics	p-value
ect	-0.116420	-11.84455	0.0013
d(lnnon_oilexport(-1))	0.055604	1.738921	0.1804
d(lnrelprices)	-0.045229	-0.199979	0.8543
d(exchdeval)	-0.001216	-0.0009	1.5862
d(forgncome)	1.3984	15.02980	0.0000
c	0.880381	1.598899	0.2081

Source: authors' calculations.

For Tanzania (Table 23), lagged non-oil export on current non-oil export exert a positive but insignificant impact on current export, the exchange rate has a positive and significant effect. Relative prices are negatively, though not significant, related to non-oil export. Consequently, since the economy of Tanzania is heavily dependent on the production and export of a few primary products with weak elasticity of demand and synthetic substitutes, the effect of the depreciation of the domestic currency on export is non-significant. This is in line with trade theory. Evidence of a significant 11% restoring capacity of the model to long-run equilibrium after a temporary shock/deviation is found.

Table 24. Panel ARDL results – South Africa

Variable	Coefficient	t-Statistics	p-value
ect	-0.05863	-2.4659	0.0510
d(lnnon_oilexport(-1))	1.8962	13.5670	0.0000
d(lnrelprices)	0.1293	1.3890	0.54786
d(exchdeval)	-0.00975	-35.0008	0.0000
d(forgncome)	1.283745	27.47593	0.0000
c	0.32434	4.87990	0.0001

Source: authors' calculations.

The panel ARDL results of South Africa (Table 24) reveal a positive and non-significant lagged non-oil export on current non-oil export, while relative prices and exchange rate devaluation both exert a negative effect, although only the latter is significant. Thus, exchange rate depreciation/devaluation has a favourable and significant impact on the non-oil export in South Africa, unlike the evidence found in other countries. This could be because the economy is relatively more diversified in manufacturing exports than other African economies. It is also evident that the model has a significant adjustment to long-run equilibrium after a temporary shock/deviation.

Table 25. Panel ARDL results – Mozambique

Variable	Coefficient	t-Statistics	p-value
ect	-0.148400	-39.17611	0.0000
d(lnnon_oilexport(-1))	0.133660	4.581990	0.0195
d(lnrelprices)	-0.713583	-0.199851	0.8544
d(exchdeval)	-8.69E-05	-1438.744	0.0000
d(forgncome)	-0.00384	0.573861	2.94763
c	1.339140	4.425830	0.0214

Source: authors' calculations.

The panel ARDL results of Mozambique (Table 25) show a positive significant lagged non-oil export on current non-oil export, implying that previous export performance tends to positively rub off on current non-oil export, particularly when policies aimed at growing the non-oil sector are sustained. Relative prices are negatively related to non-oil export but the impact is not significant, while devaluation in official exchange rate has a negative and significant effect. Invariably, as in earlier evidence, the benefits of currency depreciation on export stimulation cannot be realized when the economy largely produces and exports low volume of primary products, in addition to high import dependence, which is characteristic of the Mozambican economy. In this case, the effect of exchange rate depreciation becomes detrimental to non-oil export capacity. The error correction term is appropriately negative in line with econometric theory and significant. Thus, there is robust evidence of the significant adjustment of only 14 percent disturbances to long-run equilibrium after a temporary shock/deviation.

5.10. Empirical findings

- a. From the results of cross-sectional analysis by country, results for Burkina Faso revealed that relative prices and exchange rate devaluation had and inverse and significant impact on non-oil exports. The results for Burundi show that the lag of non-oil exports and exchange rate depreciation are positively and negatively related to current non-oil export.
- b. The panel ARDL on Mauritius revealed that lagged non-oil export has a positive and significant effect on current non-oil export, while relative prices and exchange rate devaluation exerts a non-significant but negative impact on non-oil export.
- c. The results of Nigeria show that lagged non-oil export exerts a positive but non-significant impact on current non-oil export while relative prices exert a positive and significant impact, while exchange rate depreciation had inverse and significant effect on non-oil export.
- d. The panel ARDL result for Nigeria shows that lagged non-oil export exerts a positive impact on current non-oil export, as in the case of Niger. Exchange rate devaluation had negative and significant effect on non-oil export.

- e. In the case of Rwanda, the panel ARDL results show that exchange rate depreciation had inverse and significant impact on non-oil export, while relative prices exert a positive and significant impact.
- f. For Sierra Leone, the panel ARDL results show that lagged non-oil export and exchange rate have negative and significant impacts on non-oil export, whereas relative prices had negative and significant impact.
- g. For Senegal, the panel ARDL results show that exchange rate devaluation had a negative and significant impact while relative prices are positively related to non-oil export, but the effect is not significant.
- h. The panel ARDL results for Eswatini revealed a positive and significant effect of lagged non-oil export on current non-oil export, while relative prices and exchange rate devaluation both exert negative and significant impacts.
- i. For Tanzania, lagged non-oil export on current non-oil export exerts a positive but insignificant impact on current export, the exchange rate depreciation had a negative and significant effect and relative prices are negative impacting on non-oil export, but not significant.
- j. The panel ARDL results of South Africa revealed a positive and significant lagged non-oil export on current non-oil export, while relative prices and exchange rate devaluation both exert a negative effect, although only the latter is significant.
- k. The panel ARDL results of Mozambique revealed to show a positive significant lagged non-oil export on current non-oil export, relative prices are positively related to non-oil export but the impact is not significant, while the depreciation of exchange rate has a negative and significant effect.

6. Conclusion

This research work focused on the static and dynamic responses of non-oil export to devaluation in official exchange rate, change in relative prices, and inflow of foreign capital from trading partners in 11 African countries. The data covered 11 African countries (Nigeria, Burkina Faso, Sierra Leone, Eswatini, Mauritius, Uganda,

Burundi, Niger, Rwanda, Tanzania and Mozambique). Based on the findings of the research, it can be argued that African governments should be aware of the fact that boosting local production and strengthening non-oil export can go a long mile to solve plethora of economic challenges African countries are bedeviled with. In the face of high import prices, devaluation of the exchange rates in Africa significantly hampers non-oil export in Africa, probably because the M-L condition is not met in these countries. Hence, rather than discourage, depreciation in the face of high import prices encourages import-dependency and strengthens foreign competition for domestic producers of on-oil exports. This calls for meaningful diversification of production base in Africa, particularly for manufactured products, with high value-added and multiplier effects. The benefits of currency depreciation on export stimulation cannot be realized when the economy is mainly produces and exports primary products and is highly dependent on imports, as is the case with all African nations covered in this study.

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IMPACT OF CURRENCY DEVALUATION ON NON-OIL EXPORTS IN AFRICA

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Calling for ‘The New Cultural Normal’: Learning from intra-company biculturalism

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Aim: This research aims to understand the value of individuals having several inherent cultures and explore their specific needs and skills to improve managing cultural challenges in the work environment. The emerging conceptual framework of reaching ‘The New Cultural Normal’ demonstrates opportunities for dealing with cross-cultural situations not only internationally but especially intra-national.

Design / Research methods: Based on insights and narratives of bicultural employees collected through 18 interviews, several vital categories emerged followed by the attribution of each to a corporate setting and considering which has the most substantial influence on that category. As biculturalism is an extreme form of coping with cultural diversity, the interviewees represent vital experts in coping with culturally diverse challenges.

Conclusion / Findings: The emerging concept of reaching ‘The New Cultural Normal’ describes the process of attaining the status of full integration of biculturalism among organizations. It will help each corporate setting level, defined as bicultural employees, colleagues, supervisors, and the company, to enhance their awareness of dealing with cross-cultural situations.

Originality / value of the article: This study provides a beneficial starting tool for shaping the future workplace where more inclusion and contentment will lead to qualitative improved team outcomes thus increasing corporate performance and can even result in long-term societal changes.

Keywords: Cultural Diversity, Biculturalism, Intra-national, Cross-cultural Management, Work Place Integration, Organization

JEL: M14, M16

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1. Introduction

Where do we stand, and what is the problem?

In the course of the increasing global collaboration that is forced by either push or pull drivers (Eytan 2004; Van Hear et al. 2018), society is becoming undeniably culturally more diverse and complex as vast numbers of people cross borders (Coleman 2009; van Nimwegen, Van der Erf 2010). Standard definitions of biculturalism include immigrants, refugees, expatriates, and ethnic minorities (Berry 2003). Additionally, Benet-Martinez et al. (2002) define biculturals as people who are exposed to and have internalized two cultures. Albeit institutional statistics show that bicultural individuals will make up a sizeable stake of future employees' cohorts (Coleman 2009; German Federal Statistical Office 2016), this phenomenon of biculturalism in the work environment is still understudied. On one hand, it is because of indistinguishable examined cohorts including expatriates; on the other hand, it is due to majorly focusing on international cross-cultural management. In itself, this phenomenon is worth exploring in-depth because biculturalism depicts an extreme form of coping with cultural diversity with an ever-increasing number of individuals who cannot yield to learning and becoming experts in coping with this challenge.

Bicultural individuals' experiences in the workforce can help to develop knowledge and understanding of how to deal with and adapt to diverse and challenging situations while considering bicultural skills (Nguyen, Benet-Martínez 2007). Thus, managerial implications can be drawn upon the emerging conceptual framework dealing with the full integration of bicultural individuals which will improve cross-cultural management in the future while the importance of handling culturally challenging situations inevitably increases.

Research questions

Biculturals have created unique behavioral traits and skills because they have been exposed to cohort-specific cultural situations since childhood. Thus, they are comprehensively examined in the psychological research field (Hong 2010). Nguyen and Benet-Martinez's meta-analytic research in 2007 reveals that bicultural individuals who implemented the acculturation approach to deal with their several

different cultures developed bicultural-specific skills, such as negotiation and cultural problem-solving skills, and used them across their environment and is also mirrored in their professional surroundings. Even though this circumstance has been detected and empirically proven, bicultural employees are still insufficiently investigated among corporate studies concerning their roles and impacts in the work environment (Brannen, Thomas 2010; Hong 2010). These individuals represent vital experts in coping with culturally diverse challenges whereby the data gained through qualitative interviews will lay the profound foundation of valuable knowledge to create the conceptual framework. Hence, the first objective of this study is to answer the question:

Research question 1) Which competencies do bicultural employees possess, and are they able to make use of them?

Additionally, academic research majorly supports the beneficial impact of working in culturally diverse teams; thus, synergies by sharing values and experiences can originate (Cox, Blake 1991; Stahl et al. 2010; Noe et al. 2017). Otherwise, cross-cultural management encompasses potentially arising challenges in communication, interpreting the behavior of colleagues, and also occurring frictions (Søderberg, Holden 2002; Martin 2014). Most bicultural individuals work in a company containing their primary culture while the impact of their minor culture on their work ethic and approach has not yet been examined. Thus, the question arises if their ethnic culture influences the work performance at all:

Research question 2) How do bicultural employees influence and contribute to their team's outcome and ultimately to the company's performance?

Furthermore, either forced by difficult political or environmental circumstances in their home country (push driver) or voluntary, for instance, due to labor opportunities (pull driver), an unprecedented number of immigrants will continue to settle in foreign countries (Eytan 2004; Van Hear et al. 2018). As a nation's population composition is becoming ever more fractured and diverse, especially in developed

countries, the relevance of biculturalism gains increasing importance as it will cross paths with the work environment daily (van Nimwegen, Van der Erf 2010). This development shifts the focus of cross-cultural management across national borders towards an urge for systemic research on coping with cultural diversity on an intra-national level, even more of how and what bicultural individuals contribute to the workforce (Hong 2010). To be able to learn from bicultural competencies to increase the effective coping of cultural challenges occurring in the work environment, there is a need for a more profound understanding of bicultural employees' specific contribution, which concludes in the following question:

Research question 3) What are the critical managerial factors that enable the utilization of bicultural competencies?

Why is this problem relevant?

While the collocation of society changes, the academic definition of culture also changes. Deviating from a culture defined as bounded to national borders (Hofstede 1984), its meaning needs to be redefined to include the perception of the culture of immigrants and people with a migrant background (Søderberg, Holden 2002). The majority of research about cross-cultural management analyses this topic on an international level between monocultural individuals with a different cultural background (Adler 1991; Søderberg, Holden 2002) and even more “seeks to understand and improve the interaction of co-workers, clients, suppliers, and alliance partners *from different countries and cultures*” (Adler 1991: 10). This study will expand the recent cross-cultural management research field by considering individuals with several cultures inherent from childhood on an intra-national level.

Why is this research question relevant?

The motivation for this research rests on the phenomenon's significance as well as the absence of viable theory and empirical evidence. Although a few researchers have examined biculturals and expatriates on an international level (Brannen, Thomas 2010; Hong 2010; Fitzsimmons 2013; Barker 2017), the corporate integration of biculturals on an intra-national level is still rarely explored, leading to a research gap

in the field of cross-cultural management intra-nationally. To secure a company’s success in the future, the current perception and value of individuals’ cultures, both inter- and intra-national, needs to be redefined (Søderberg, Holden 2002). By doing so, the comprehension of individual cultural backgrounds and their specificities increases, resulting in a respectful and error-minimizing atmosphere not only in the work environment but perhaps even in society in the long term.

How is the research question being addressed?

After specifying the research gap and presenting a literature review, there will be an elucidation on people growing up within two cultures and solely interviewing bicultural employees while consciously excluding expatriates. Only the narratives of bicultural employees facilitate mitigating the risk of concluding indistinguishable implications and outcomes (Søderberg, Holden 2002). Those shared experiences can therefore bring forth new implications for cross-cultural management in companies that enhance the effectiveness and productivity of all parties in the workplace. The insights will benefit corporations and also society even more on a socially sustainable level in the long term.

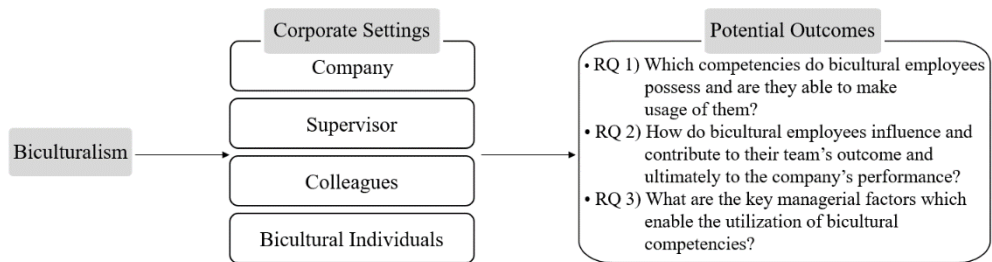
This study begins with developing a sensitizing concept, stating the suggested direction for the emerging theory (Bowen, 2006). Furthermore, the emerged theoretical concept will diminish the sizeable theoretical gap by using a qualitative research method (Bowen 2006; Yin 2015). We relate to biculturalism research by Nguyen and Benet-Martínez (2013), Fitzsimmons (2017), and Barker (2017) while considering LaFromboise et al.’s ‘Bicultural Identity Integration Model’ (1993). These sources enable building upon current research outcomes and further developing and updating those results if necessary.

While the importance of intra-national cross-cultural management and its impact increases, this research further explores four corporate setting levels concerning the process of integrating biculturals which are defined as follows: i) bicultural employees, ii) colleagues, iii) supervisor, and iv) company; see the sensitizing concept presented in Figure 1. Those levels originated from the widely used hierarchical structure in companies and the number of keyword repetitions regarding corporate settings of the participants during the interviews.

The emerging framework may help to better comprehend the needs and skills of bicultural employees and further support decision-making and approaching methods of colleagues. Figure 1 illustrates the starting point of developing the theoretical framework where the corporate levels and subresearch questions, as mentioned above, are organized and connected.

The findings paragraph will present the answers to the research questions based on the sensitizing concept regarding biculturalism and its impact and integration in the work environment.

Figure 1. Conceptual model of the influence of biculturalism on corporate settings and its potential effect on the work environment



Source: authors' own elaboration

2. Literature review

In the corporate world, situations across national borders occur quickly due to modern communication possibilities such as emails or telephone calls. Nevertheless, it reduces the need for employees to visit other foreign countries and hence restrains them detecting contextual cues that are essential for decoding communication accordingly (Meyer 2014).

Coping with cultural diversity involves delving deeper into others' cultural traits that encompass the integration of a cultural group consisting of individuals who collectively share specific norms, values, or traditions into a social system defined by another hegemonic culture (Cox 1994). Otherwise, being unaware of cultural diversity

and not creating suitable management strategies will decrease the team’s motivation and outcome, resulting in a business not achieving its goals (Meyer 2014). Regarding the undeniable urge for coping with cultural diversity to secure the long-term success of international acting companies, bicultural individuals can help monocultural colleagues to bridge the gap of being open to cultural diversity and coping with this topic intra-nationally without leaving their home country (Meyer 2014; Mello, Delise 2015). Diverse cognitive styles in a team that impact the perception of problem and decision-making can lead to complementary knowledge pools, skills, and capabilities and – even more – leading to sustainable long-term improvement of a team’s outcomes (Mello, Delise 2015). Having mention one of bicultural individuals’ competencies in the form of cross-cultural communication, empathy is another proven skill which helped bicultural individuals to put themselves in someones’ position and therefore where able to solve challenging situations more successfully (Costa 2020). Further drawing upon the findings of Hoever et al. (2012) that cultural diversity fosters teams’ creativity, this work focusing on biculturalism and its integration into the daily workforce can further contribute to expanding their approach. Moreover, this research will help to comprehend how to cope with and learn about biculturalism and will finally conclude in practical managerial implications of how to cope with cultural diversity intra-nationally.

Bicultural employees in organizational studies

Biculturalism has been elaborately discussed in the socio-economic and psychology research fields (LaFromboise et al. 1993; Benet-Martínez et al. 2006; Nguyen, Benet-Martínez 2013). However, the relationship between bicultural individuals and their monocultural colleagues in a professional setting is still significantly understudied (Hong 2010). A brief overview of current publications concerning biculturalism in organizational studies will help to gain a holistic perspective by viewing several aspects accordingly.

Hereby, the ‘Acculturation Model’ depicts an essential element of the biculturalism research field (Brannen, Thomas 2010). It compromises the acquisition of the primary culture while individuals can preserve the connection to their ethnic culture. It emphasizes the possibility of individuals altering their cultural attitudes

until they become fully competent participants of their hegemonic culture. Nevertheless, they are still identified as a member of their minor culture. Over time, studies about acculturation changed the perception of considering a uni-dimensional approach to a bidimensional dependency involving the possibility for the individual to feel as if they belong to both cultures, however, on a different level (Berry 1990; Brannen, Thomas 2010). This bicultural identity approach often applies to individuals who need to ultimately acquire the primary culture to be economically successful due to external cultural pressure and is part of LaFromboise et al.'s 'Bicultural Identity Integration Model' (1993).

Additionally, the 'Model of Multicultural Identity Dimensions' by Fitzsimmons (2013) can help affected parties at work better comprehend their bicultural colleagues. She reveals three substantial categories that influence an individual's social identity: personal history, current context, and cultural content. Those variables partly overlap with LaFromboise et al.'s (1993) contribution concluding that similar cultural identity procedures can be found among bi- and multicultural individuals. Both models increase the comprehension of bicultural individuals' decision-making, behavior, and skills. With this, bicultural skills are defined as cohort-specific capabilities resulting from being exposed to complex cultural environments and are only possessed by bicultural individuals (Hong 2010; Brannen, Thomas 2010). However, organizations still confuse those skills that mistake the ethnicity of biculturals with country-specific knowledge (Brannen, Thomas 2010).

Hong (2010) has explored biculturals embedded in a multinational organization. By examining existing literature, she created the concept of bicultural competencies that deals with the level of bicultural employees' influence on the effectiveness of multicultural teams. Although Hong's model helps to identify how multicultural teams can benefit from bicultural employees, she does not consider the potential advantages for companies in an intra-national work environment and market. The relevance of exploring cross-cultural management on an intra-national level increases with the rising number of employees having a bicultural background (Earley, Mosakowski 2000; Larsson, Lubatkin 2001). Further, even though Barker (2017) also focuses on biculturalism in the work environment and uses in-depth interviews to gain new insights and narratives, she includes monocultural employees and expatriates in

her research. The inclusion of multicultural interview partners and expatriates in her sample represents the severe difference in this case, distorting biculturals’ cohort, skills, and cultural background in handling diversity. It is important to note that biculturalism that is inherent in an individual is not equitable with a person’s multiculturalism. There is a profound difference between growing up with two different cultures ‘from the cradle on’ and learning in a later stage of life how to behave appropriately in another culture, for example, as an expatriate. Meaning, in that case, there must be a distinction between cultural identification and cultural knowledge whereas an individual’s cultural identity is formed subconsciously and chosen unconsciously (Brannen, Thomas 2010). Still, Barker’s study contributed extensively to the research field of understanding bi- and multicultural individuals in the work environment by examining the acculturation process. Her findings revealed the requirement of “equality, mutual respect, autonomy, and openness among interaction parties” (Barker 2017: 299) to be able to integrate biculturalism in the workplace. Therefore, it significantly contributes to future research of biculturalism in the work environment and how to cope with cultural diversity on a bilateral level.

3. Methodology

3.1 Research approach and data collection

To gain in-depth insight into the value of the management of cultural background diversity in a corporate setting to further conclude managerial learnings drawn upon bicultural experiences, we adopted a qualitative, inductive research design. This approach facilitated gathering participants’ accounts from their perspective for which biculturals expressed their experiences and feelings in their own words. To achieve the research goals, we chose in-depth, semi-structured interviews with biculturals as the primary method for data aggregation. Semi-structured interviews with open-ended questions enabled better understanding informants’ experiences. Further, interviews create possibilities to follow new leads as they arise and to help identify new ways to understand the topic (Bernard 1988). The interview has been conducted in five different parts: Starting with collecting general background information from the

interviewee to confirm their expert status, followed by questions concerning their cultural background to assess their degree of integration. As soon as the relevant personal information have been collected, the next part comprises questions about the company's recent status handling biculturalism, then diving deeper into the teams.

The interview guideline including the utilized questions can be found in the Appendix A. In addition to the interviews, we applied diaries as a further data collection method. After the completion of the interview, the participants received a brief diary template. During the following six weeks, the interviewee was required paying attention to two to three arising work-related situations for which biculturalism as a topic occurred. Those recent experiences helped and depicted pivotal support to develop cutting-edge propositions.

We applied the grounded theory methodology principles that emphasize representing informants' voices (Glaser, Strauss 1967; Charmaz 1996; Locke 2001). This approach gains its utility and generality from open coding using the data gathered during the interviews which enables the detection of relationships and causality between variables (Burnard et al. 2008; Glaser, Strauss 2017). During the continuous process of comparing the interviews and diaries, findings and relationships were refitted and refined until straining core categories, classified in subcategories, emerged for creating the conceptual framework (Glaser, Strauss 2017). Consequently, the concept based on the collected data and its steady comparison allowed exploring the relationship between the independent variable of being bicultural and its impact and outcome concerning the work environment with this defined as the dependent variable in this research (Goulding 2002). However, this database can lead to a different outcome if any other researcher uses them and interprets them differently (Glaser, Strauss 2017).

3.2. Sample design

The study participants were strategically selected based on their expert status, considering their cultural background, and completed years of work to achieve vital and profound findings. This purposefully created sample obtains the potential for shifting the perspective of cross-cultural management to rethink cultural diversity within organizations through the analyses of information-rich and insightful cases

(Patton 2007; Brannen, Thomas 2010). Further, a multi-case qualitative study enables detailed comparisons and evaluations of current settings and situations in the workplace and constitutes the base for creating a conceptual framework expanding the research area of bicultural employees (Bickman, Rog 2008).

The dimensions for selecting the interviews were initially based on a homogenous sampling approach, meaning reducing variation in order to focus on one sample group (Patton 2007). For this purpose, all of the participants needed to fulfill the following characteristics: i) inherently having two cultures 'from the cradle on', ii) growing up bilingual, and iii) working full-time for at least one year. Moreover, the sample aims to contain various minor cultures to receive diverse perspectives on the focal phenomena while limiting a biased outcome (Eisenhardt, Graebner 2007). By choosing a broad range of diverse cultural backgrounds, this study achieves a wide variety of experiences and perspectives and, therefore, considerably helps to identify common central patterns across participants' cultures (Patton 2007). It might be argued that the selected choice of interviewees can lead to a biased outcome compared to statistical sampling, however, as the selection is well deliberated and executed carefully, it becomes a strength of this study (Patton 2007). The average age of the participants is 30, and the average years of work experience cover approximately five years of which 55 percent of the interviewees are females, and 45 percent are males. Last, but not least, to create generalizable outcomes, a wide range of industries was covered instead of solely focusing on one company. An overview of the participants is shown in Table 1.

We used different initials in place of the participant's names, and firm names mentioned in citations are changed to secure the interviewee's privacy and protect the traceability to a particular company. Age, gender, and the company's industry remained the same for the evaluation (see Table 1). Eighteen interviews enabled sufficient comparisons which create a high level of generality, and explanatory powers of the core categories as various participants shared similar incidences and experiences, for example (Goulding 2002; Glaser, Strauss 2017).

Table 1. Sample characteristics

#	Initials	Age	Sex	Born in Germany	Minor Culture	Major Culture	Work Experience	Current Industry	Position	BII Model
1	YC	27	f	Yes	Chinese	German	2,5	Trade & Risk	Analyst	Acculturation
2	PS	29	m	No, since age 11	Ukraine	German	2,5	Construction industry	Engineer	Acculturation
3	TJ	34	f	Yes	Vietnamese	German	6	Education	Teacher	Assimilation
4	HH	26	f	No, since age 1,5	Afghan	German	3	Fashion Retailer	Local Direct Marketing Intern	Acculturation
5	ND	26	m	Yes	Vietnamese	German	1,5	Sports Agency	Junior Production Manager	Acculturation
6	AD	29	m	Yes	Turkish	German	3,5	Finance	Investment Specialist	Assimilation
7	TC	31	f	Yes	Vietnamese	German	7	Education	Research Associate & Lecturer	Assimilation
8	IC	30	f	Yes	Italian	German	2	Electrification & automation	Corporate Security	Assimilation
9	DP	28	m	No, since age 22	Indian	Canadian	3	Automotive	Engineer	Acculturation
10	TI	30	f	Yes	Vietnamese	German	6	Automotive Consultancy	Manager	Acculturation
11	LD	25	m	Yes	Polish	German	1	Construction industry	Technical Manager	Acculturation
12	KL	30	f	Yes	Congolese/Omani	German	8	Insurance for Art and Luxury Goods	Regional Marketing Manager	Fusion
13	KA	29	f	Yes	German	Turkish	8	Media	Senior Consultant Product Placement	Alternation
14	ME	36	m	Yes	Bosnian	German	6,5	Training & further education	Team Lead	Acculturation
15	LM	32	f	Yes	Angolan/Portuguese	German	9	Luxury Fashion	Team Lead	Acculturation
16	LL	25	f	Yes	French	German	2	Aviation	Flight Attendant	Assimilation
17	EH	28	m	Yes	Turkish	German	4	Training & further education	Online Marketing Manager	Acculturation
18	EE	41	m	Yes	Turkish	German	15	Insurance	Department Head	Alternation

Source: authors' own elaboration.

3.3. Data analysis & coding

The interviews were conducted from September until mid-October 2020 while using the online video call platform 'Zoom™' as the communication tool. In-person meetings would have been preferable; however, they were impossible due to the current global pandemic this year. Compared to in-person interviews, the Zoom application provides video recordings and further enables construing what the participants have relayed as well as their mimicry and gestures. Paying attention to things that might not have been captured on the audio track and "read between the lines" is crucial to interpret the data correctly (Goulding 2002). The interviews lasted between 27 and 75 minutes with an average conversation length of 49 minutes.

During the transcription of the interviews, we continuously used the comparative method of qualitative analysis. Through substantive coding, encompassing the direct

fracturing, and analyzing the data, memos were taken during the transcription process in the form of keywords or brief sentences such as “unconscious evaluation”, “ownership”, or “minor culture traits depict as beneficial” (Holton 2007; Glaser, Strauss 2017). Those used keywords help in the further coding process to determine causality and detect the main categories based on a theoretical saturation as soon as the data generates interchangeable indicators (Glaser 1992; Burnard et al. 2008). This inductive approach is used to extensively elaborate the data and explore a research question when little is known about the study phenomenon (Glaser 1992; Burnard et al. 2008). Additionally, the diary template helped to minimize distortion and ensure that all of the study participants had more time to rethink and reflect on experiences from the past. Therefore, insights gained through the diaries were included along with the transcripts during the coding process.

Consequently, a new theoretical concept emerged that was distinguished by its parsimony, scope, and generality (Holton 2007, Burnard et al. 2008; Glaser, Strauss 2017). With this method, the analysis of the transcripts and diaries concluded into ten main categories that were assigned to four corporate setting levels (see Table 2 in the following chapter).

4. Findings and discussion

All 18 interviewees shared relevant experiences which contributed substantially towards creating the theoretical concept based upon an insightful and elaborate database. The beginning of the analysis revealed ten main categories (see second column Table 2) that encompass several subcategories such as, for instance, ‘trustworthiness’, ‘holistic approach’, or ‘valuing biculturalism’. While the main categories have evolved, a further dimension was recognizable based on the mentioning and repetition of keywords like ‘my colleagues’, ‘manager’, or ‘the company’ which are, as a result of this, defined as the corporate setting levels (see first column Table 2). Each level encompasses different subcategories concerning biculturalism and is assigned with those influenced the most by the individuals on that level.

Based on the vast amount of newly collected data, these findings revealed markedly important issues attributed to the corporate setting levels where different aspects possess another weighted priority. Furthermore, with the help of the assigned categories presented above, the research question from the beginning can now be answered. Table 2 presents an overview of the answers to each research question.

Research Question 1 “Which competencies do bicultural employees possess, and are they able to make use of them?” is answered by the outcome categorized towards the bicultural employees’ main categories such as bicultural skills, intercultural competency, and advanced work ethic and their subcategories (see Table 2). Additionally, to make use of their unique skills effectively, the work setting encompassing the team collocation and team atmosphere is considered the primary driver. Without supporting team structures that allow the integration of biculturalism, it considerably hinders those individuals from fully incorporating their bicultural competencies at work as an out-group feeling remains.

Moreover, to solve *Research Question 2, “How do bicultural employees influence and contribute to their team’s outcome and ultimately to the company’s performance?”*, the main categories assigned to bicultural employees and colleagues must be considered. On the one hand, bicultural employees’ assigned skills and competencies directly impact the work approach among the team, for example, in the form of their pragmatism or intermediate function. On the other hand, bicultural employees can broaden their colleagues’ perception of biculturalism by sharing knowledge about their ethnic culture, leading to colleagues who then become familiar with approaching challenging situations encompassing culturally diverse backgrounds or become aware of their biases and can therefore challenge those. The incremental establishment of cultural diversity on an intra-national level enhances team performance and consequently increases the firm’s performance, which emphasizes and supports the results of the academic work by Tadmor et al. (2009) and Dietz et al. (2010).

Table 2. Corporate settings with assigned categories and research questions

Corporate Setting Level	Main Categories	Sub Categories	Answer to Research Question
Bicultural employees	Bicultural skills	Empathy Trustworthiness Cultural sensitivity People approaching skills Cultural frame switching	RQ1 & RQ2
	Intercultural competency	Intermediate function Efficient problem-solving Cultural knowledge & skills	RQ1 & RQ2
	Advanced work ethic	Stress-resistance & pragmatism Emotions Challenging processes Holistic approach	RQ1 & RQ2
Colleagues	Approaching biculturals	Personal context Job position context Artificial distance	RQ2
	Challenging bias	Outer appearance Political correctness Fear of unpredictability	RQ2
	Team atmosphere	Sharing knowledge Facing cultural inappropriateness	RQ1 & RQ2
Supervisor	Team collocation	Cultural-diverse team Level of openness	RQ1 & RQ3
	Managerial support	Role model Equality & equity Equal treatment	RQ3
Company	Corporate efforts	Internal contact point Valuing biculturalism Cultural diversity washing	RQ3
	Corporate benefits	Internationalization efforts Competitive advantage	RQ3

Source: authors’ own elaboration.

Last but not least, *Research Question 3*, “*What are the key managerial factors to enable the utilization of bicultural competencies?*” is answered by the concluded findings considering the main categories of team collocation and managerial support (see corporate level ‘Supervisor’) and corporate efforts and corporate benefits (see corporate level ‘Company’). Due to the fact that a company forms the playing field and sets the rules in the shape of corporate values and beliefs, it is pivotal for the integration of biculturalism to create a platform for experiencing intra-national cross-cultural management. Thereby, supervisors and managers represent significant role models who must follow and act aligned with these rules. Hence, they significantly impact the integration process of bicultural employees via their chosen team

collocation and level of managerial support. By providing a supportive work environment where biculturalism is valued and bicultural employees feel at ease and are well integrated, each corporate setting can profit from using bicultural competencies while improving coping with cultural background diversity.

The concept of reaching 'The New Cultural Normal'

As the literature review and the conducted research disclosed, bicultural employees play a crucial role in current work environment changes. In the long-term, this work cohort influences their colleagues culturally and enhances their perspective on intra-national cross-cultural management. This is then followed by actions of the supervisor based on the pressure of their staff which can induce changes on a corporate level as soon as a certain threshold of facing needs of individuals with a cultural-diverse history is inevitable. Figure 2 illustrates the interrelation of these corporate settings.

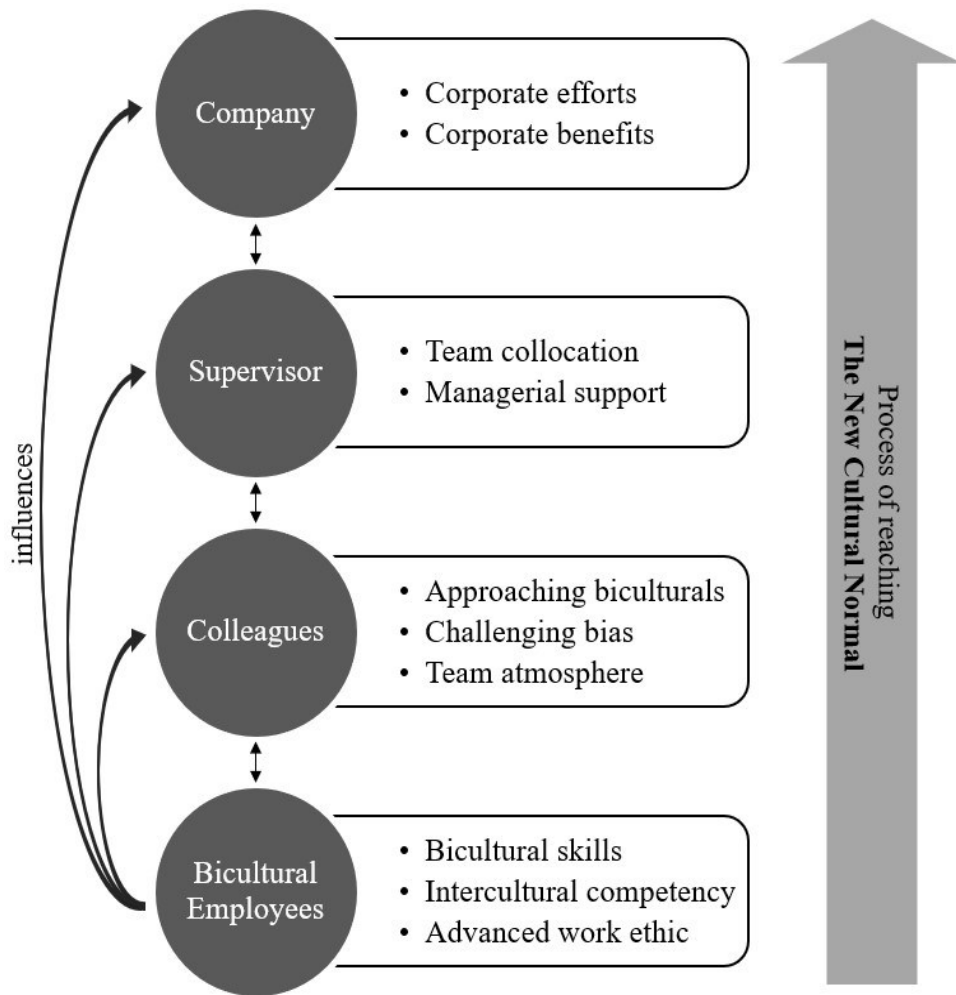
Based on the analysis of the collected narratives of bicultural employees, a theoretical concept of intra-national cross-cultural management emerged, encompassing four different corporate levels. While bicultural employees depict the starting resource to initiate changing perceptions of biculturalism at the workplace, the following corporate levels transmit further changes bilaterally. However, this group of individuals constitutes the substantial cohort that can influence each other directly at the corporate level. When shifting the perspective towards biculturalism being associated with better psychological adaptation, greater productivity and achievement, and fewer interpersonal conflicts, individuals will incorporate their bicultural skills in the work setting (Schwartz et al. 2006). This effect can be reinforced with the more levels that become involved. This process of shifting perspectives towards cross-cultural management on an intra-national level results in achieving a stage of cultural equality and is referred to as the concept of reaching 'The New Cultural Normal' (see Figure 2).

The interviews and diaries contain striking insights into the current cognition of biculturalism in the work environment and share a glimpse of how bicultural individuals strive for a society where having a migrant background is perceived as something familiar whether someone is monocultural or bicultural. Firstly, this is

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supported by the following statement which describes how bicultural employees can affect society’s perception of people with a cultural-diverse background:

Figure 2. The process of reaching ‘The New Cultural Normal’



Source: authors’ own elaboration.

Through my presence, perhaps prejudices are being removed or at least being recognized. In my case, when you see my name, you associate it with a cleaner or with a construction worker. I can show my colleagues that people with the same ethnicity

as mine can possess jobs like theirs, which conclusively affects them, who then pass it on and change the general perspective of biculturalism among society. (ME)

Additionally, bicultural employees ultimately strive for fair and equal treatment; however, decision-makers should simultaneously consider their strengths instead of overlooking bicultural competencies:

Interviewer: Do you wish things were different there [at the workplace]?

Interviewee: Yes, I do. I would like to be treated like others. Particularly regarding my boss. (TC)

As I said, my bicultural skills are not really appreciated. They [colleagues and managers] overlook that I also possess other intercultural competencies too. I am not only able to speak [other] languages. Rather I also have an understanding of other cultures or values or people. My bicultural skills are very rarely connected or linked to work. (DP)

Even though cultural diversity has gained increasing importance, it is still challenging for biculturals to find the right balance between their two cultures as many Western countries encourage those citizens to pursue the assimilation strategy. Instead, they would feel more comfortable if they are afforded the opportunity to acculturate their inherent cultures (Van Oudenhoven et al. 2006).

Most colleagues appreciate my biculturalism. Because that's what makes me who I am, and that's what makes the performance what it is consequently. However, I made other experiences in the same company as well. In other words, I have been accused of my cultural background, [...] wherefore a project didn't take the desired course, which is why I tried to suppress my other side after that incident. (KA)

The integration process will take time but might lead to significant changes among society in the long-term as the levels interact dynamically with each other, which depicts a similar development like the establishment of gender equality and the diminution of sexism. At the last stage of the process, biculturalism is entirely accepted by society, and bicultural employees are thoroughly integrated into the workforce while also using their bicultural competencies instead of completely adapting to the hegemonic culture work approach. The support of bi- or multiculturalism in the form of public policies mirroring its increased value for society conclusively leads to greater national success and well-being (Schwartz et al. 2006).

5. Theoretical contribution

Through the transcription, coding, and analysis of 18 interviews with bicultural employees, a theoretical model emerged regarding how to achieve the stage of 'The New Cultural Normal' that contributes to the research field of cross-cultural management theory. This new normal is hereby defined as the societal stage in which biculturals are fully integrated into society, and people categorize individuals based on their skills instead of solely considering ethnic culture. These empirical findings augment past research in the field of biculturalism in several ways, embedded in the work environment context: (1) Shifting the perspective of cross-cultural management happening only across borders and between people with different cultural backgrounds towards intra-national cross-cultural management considering bicultural employees; and (2) conceptualizing a theoretical framework regarding how to reach 'The New Cultural Normal' in which biculturalism and its benefits are entirely accepted and integrated – in the work environment and among society in the long-term – while the cohort of bicultural employees is steadily increasing.

Bicultural individuals represent experts in coping with cultural diversity in this study. Their shared knowledge contributed to this research field by deepening the meaning and valuation of cultural diversity in corporate settings, coping with vital cultural and personally challenging situations, and further emphasizing intra-national cross-cultural management.

The data reveals the inability of many companies to make use of bicultural competencies as they overlook extensive potential. When assuming that bicultural individuals are fully integrated into their main culture, the starting point of valuing biculturalism cannot only be the responsibility of the bicultural individuals themselves. The analysis of the data bears contradictive findings compared to Gross' results (2004). She concluded that a company is more likely to recognize and value those skills, "the better the employee knows the language and culture" (Grosse 2004: 367). A company or team can only reap the benefits of bicultural competencies if colleagues fulfil the requirements of cross-cultural knowledge adsorption that comprises valuing different cultures, coping with ambiguity, and listening and observing (Fink et al. 2005).

The emerged theoretical concept of ‘The New Cultural Normal’ depicts the basis for examining the bicultural employee cohort and their integration into the workplace in the future. Furthermore, as four different levels of corporate settings have been detected, eligible and empirical-based implications can be drawn that are suitable for each specific setting thereby avoiding misunderstandings or misconceptions. This theoretical framework bridges the recent multicultural, cross-cultural management theory (Søderberg, Holden 2002; Martin 2014) with current societal developments of increasing numbers of bicultural individuals (Coleman 2009; van Nimwegen, Van der Erf 2010) and elucidates their unique competencies and roles in the workplace (Hong 2010; Mok, Morris 2010; Barker 2017).

Again, it is pivotal to bear in mind the crucial origin: There is a severe difference between growing up with two cultures ‘from the cradle on’ (being bicultural) or learning how to behave among another culture as an expatriate or late immigrant (being multicultural). Instead of connecting culture to state borders, it is based “on shared or partly shared patterns of meaning and interpretation” which continually changes and is modified “by the people identifying with them and negotiating them in the course of social interaction” (Søderberg, Holden 2002: 112). As bicultural individuals strongly identify themselves as being part of the primary culture and their minor culture simultaneously, they can have a pivotal impact on redefining and reinterpreting current cultural values and behaviors wherefore strict cultural borders are becoming indistinguishable. Practical implications can be drawn upon the answers to the research questions mentioned in Table 2.

6. Practical implications

This academic work provides several valuable practical implications. First of all, companies need to induce cross-cultural management skills on a team management level that includes monocultural and bicultural colleagues to secure an efficient bilateral way of communication by participating in several sessions of training. With the support and lessons provided by a coach, employees can learn to shift from an ethnocentric perspective towards valuing culture itself and then subsequently perceive

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it as a powerful source of knowledge and potential synergies (Søderberg, Holden 2002). Although it will be a gradual development until those skills are established in employees’ minds, initiating the enlightenment of intra-national cross-cultural management is pivotal for creating working relationships with colleagues. Thereby, knowledge transfer, organizational learning, and networking constitute key tools for developing cross-cultural management skills (Søderberg, Holden 2002). However, those workshops and training sessions should be offered by external coaches to avoid any sense of guilt or defensive behavior among colleagues.

Secondly, on a human resource management level, team collocation plays a crucial role in the cultural development of the company. Based on our empirical findings, managers and supervisors should increase their awareness regarding the benefits and challenges of working with bicultural employees. As the advantageous impact overrules potentially occurring burdens among a team, challenging internal biases regarding ethnic culture constitutes a crucial step toward achieving ‘The New Cultural Normal’. After reaching a threshold of incorporated bicultural individuals, it can be supportive for the enhancement of managing the (cultural) diversity at work and increases the level of effectively dealing with culturally challenging situations.

Last, but not less important, are corporate implications. To be economically successful in the globalized market, companies need to become a ‘learning company’, defined as organizations that are “skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights” (Garwin 1993: 51). Those companies can develop a competitive advantage by integrating diversity by supporting biculturalism and reap its benefits in the form of shared knowledge and the right use of bicultural skills, for instance. In the event that companies already employing bicultural individuals, they should use those existing networks to create opportunities for cultural knowledge exchange. It is decisive to draw the connection between cultural knowledge, the integration of bicultural employees, and practical business outcomes to ensure that the employees of an organization accept such offers by providing profound comprehension. In the long-term, it might be even advisable to integrate knowledge sharing efforts into the work routine (McDermott, O’Dell 2001).

We propose that companies need to foster an organizational culture in which organizational members such as bicultural individuals can utilize both cultures and feel confident in knowledge-sharing and decision-making to be economically successful. In conclusion, companies should treat biculturalism within an individual as a valuable asset just like the positive perception of cultural diversity between individuals (Brannen, Thomas 2010).

7. Limitations and future research

Even though the purposeful sampling enabled this research to achieve generally valid implications, a number of limitations arose simultaneously. First, the hegemonic culture throughout the sample was German. The question subsequently arises of whether other scholars would achieve different findings if choosing another primary culture. On the one hand, overlapping statements of the participants demonstrate that there are overall general implications regardless of cultural combination. On the other hand, the findings also support Earley and Mosakowski's (2000) concept that acculturation approaches vary across ethnic cultures. Secondly, the perception of biculturalism and the level of political correctness appear to be connected to industry specificities. Several participants shared the information that the perception of biculturalism might have been company-specific, meaning industries such as banking or insurance are still strongly conservative work settings. Hence, by focusing the sample on considering only a specific industry, different implications concerning the management of biculturalism may arise. In addition to that, a company's internationalization efforts also determine the level of biculturalism at the workplace. The more that a company is searching for creating international ties, the more crucial the role of bicultural employees seems to be. As this academic research included any company and industry in the sample, a greater amount of specific consideration of focusing on one of those categories can create further knowledge in that area. In-depth investigation to detect the relationship between those two variables represents a further possibility for future academic research.

8. Conclusion

This study encompasses the current research status concerning biculturalism in an organizational setting. The emerged theoretical concept, based on knowledge and insights shared by individuals who are defined as biculturals, is referred to as the concept of reaching 'The New Cultural Normal'. By that, it meaningfully expands the research field of cross-cultural management. The relationship between monocultural and bicultural colleagues can therefore be better comprehended by all of the participants in question, leading to more cultural understanding that not only has a beneficial impact in the workplace but further also has the unique potential to enhance societal structures in the long-term. Thus making this study truly worthwhile (Bowen 2006). This process should occur on a bilateral level to enable the evolvement of the entire work environment to a level where 'The New Cultural Normal' will be called 'Normal', meaning, in conclusion, achieving a stage where *culturally diverse backgrounds* are entirely accepted by society. This should be integrated into the workforce while also using bicultural competencies instead of completely adapting to the primary culture work approach and ignoring the diversity that comes along with their ethnic one.

While the cultural composition at the workplace is becoming more heterogeneous and fragmented, the ability of companies to cope with their employees' diverse cultural backgrounds gain an even more substantial meaning for long-term success. This framework can help an organization in the future to develop its own holistic and meaningful strategy of corporate cross-cultural management. Moreover, the overall objective needs to be the achievement of mutual consideration among society in general by respecting other cultures and providing opportunities to evolve and cherish cultural diversity intra-nationally.

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Appendix A: Interview guideline

Note: Italic sentences function as references for the interviewer.

1. Collection of general background information from the interviewee to confirm their expert status.

1.1. Feel free to introduce yourself briefly!

- Personal information: Name, age, gender, highest graduation level, what two cultures do you hold

1.2. And where were you born?

1.3. In which country do you currently live?

- Have you lived in any other countries? *Def. "lived": renting an apartment, at least 6 months, exclusion Work & Travel*
- In which country do you mainly work?

1.4. How many years of work experience do you have?

- What is your current position and how long have you held it?

2. Gathering cultural background information from the interviewee to assess the degree of integration of the interviewee's bicultural identity.

2.1. What languages do you speak?

2.2. Now we come to a few questions to find out how you define your own major/minor culture *Def. "main and secondary culture": main culture (MC) is the culture you deal with most in your everyday life*

- In what language do you dream?
- On a scale of 1-5 (5 is defined as native speaker), how would you rate your language proficiency of your main/ secondary culture?
- Which of your two cultures do you feel you belong to most of the time?

2.3. In which country were your parents born?

- Have you lived in your parents' home country for any period of time?
- In which language do you converse with your parents?

2.4. I will now ask you questions about the compatibility of your cultures. In which areas of life are your cultures more easily compatible (e.g., family, education, religion, work, etc.)?

- If something is not a given, would you like it to be different?
- Does it lead to challenges in other areas of life?

2.5. And in what areas of life are they more difficult to be compatible (e.g., family, education, religion, work, etc.)?

- If something is not a given, would you like it to be different?
- Does it cause challenges in other areas of your life?

2.6. Do you find it easy or difficult to switch between your cultures?

- In which situations does switching occur?

3. Questions on how to deal with biculturalism in your company.

3.1. Please give us a brief overview of your current company (Industry, size, location)

3.2. During the application process for a new position: Did your interviewer ask or address anything about your cultural background?

- If so:
 - Did you like/did you not like to talk about your cultural background? Why?
 - What were your first thoughts when your counterpart brought up this (personal) topic? Did you feel stressed, relieved, more cautious in your response, etc.?
- If no:
 - Would you have liked the recruiter to ask you something about your cultural background? If yes/no, why?
- How do you perceive biculturalism in the company? Is it valued or is it an issue?
- To what extent do your two cultures play a role in the workplace (behavior, language, international colleagues, connections abroad)? Give examples.

4. Questions about dealing with biculturalism in your team

4.1. Please tell a little about your team *Def. "team": For this research project, a team is defined as a collaboration with colleagues with whom you have regular interactions.*

- How many people does the team include and how is the team structured?
- What is the mission of the team?
- Are you surrounded by other bicultural colleagues & co-workers?
 - If yes: How do you think these bicultural individuals in the team influence the team structure/work climate?
 - If no: Do you think it would make a difference to the team structure/work climate and why?
- Do you have the impression that mono- and bicultural colleagues are treated differently?
 - If yes: In which situations and how did they feel about it? How do you evaluate this situation?
 - If no: Do you wish it were different and why?

4.2. Is your MC also perceived/defined the same way as you by your team/colleagues?

4.3. In your opinion, how are your skills rated by colleagues? (e.g., do your colleagues' expectations match your own; do you feel under- or overchallenged)?

- Have there ever been misunderstandings regarding certain tasks between you and your colleagues? Give examples.

4.4. Do you feel treated differently by colleagues because of your cultural background? Give examples. (*Note: Interviewee is bicultural, so main culture may still be visible*)

4.5. Is your secondary culture addressed in the work environment by you starting out or colleagues (e.g., in meetings, emails, during lunch, etc.)?

- How do you feel about this?
- To what extent can you talk openly about it with your colleagues?

- 4.6. In your opinion, what is your greatest strength/weakness compared to other monocultural colleagues?
- 4.7. In what ways can your biculturalism be an asset to the team?
- 4.8. On the whole, do you feel comfortable in your team?
 - If no: Would you like to see changes in the way you interact with your BK?
 - If yes, what makes you feel this way?

5. Conclusion of the interview:

- 5.1. Now we come to the end of the interview: Is there anything else you would like to add that we have not yet mentioned in context?
 - Do you still have any questions that you would like to ask?
- 5.2. As mentioned in the info mail, you will receive a follow-up mail with a small "diary template" afterwards
 - Now that we have approached the topic of your biculturalism in the workplace, you may think of two three more examples/experiences in the next 6 weeks that are either already in the past or are yet to occur
 - Just writing a few short sentences in the template.
 - This is all voluntary, but would still be a great addition to the study!
- 5.3. Thank you for your time and participation in this study!

Call for Papers

9th Multinational Energy and Value Conference

ESG in the Energy Sector

You are cordially invited to submit your research papers for presentation consideration at the CEVI conference that will take place on May 11th-13th, 2023. This conference, hosted by the LIDAM group of the Université catholique de Louvain (UCL), will be organized both in person and online and aims at bringing together academics and practitioners from all over the world to focus on timely energy finance and investments, financial performance, energy markets and valuation issues in the energy sector.

The theme of this year's conference focuses on the environmental, social, and governance (ESG) concerns, which are now high on the agendas of policymakers, firms, investors, and academics worldwide, in particular for the energy industry. The energy industry is one of the leading actors in the climate change challenges. However, today's energy industry is not only exposed to considerations regarding its impact on the environment, but the sector now also has to consider its social and governance policies in order to meet ESG expectations. Yet, such influences on the value of energy firms remain to be investigated. This conference will be the opportunity to present, discuss and examine such challenges, along with other energy issues, such as: Financial Regulation; Financial Markets; Financial Risks; Asset Pricing; Value at Risk; Capital Structure; Sourcing Capital; Corporate (Re-) Structuring; Corporate Governance; Behavioral Finance; Financial Performance; Cost Control; Financial Accounting; Fiscal and Legal Issues.

This conference is organized in collaboration with the Center for Energy and Value Issues and the Energy Markets Research and Application Center of Hacettepe University in Ankara, Turkey.

Submission

Please submit your papers (completed or nearly completed) or participation interest via e-mail to: James Thewissen (james.thewissen@uclouvain.be), by February 15th, 2023. Authors will be notified regarding the acceptance of their papers after reviewing. Final acceptance of full papers will be notified by February 28th, 2023.

Conference Fee

The conference fee will be waived.

CEVI Book

Papers selected for this conference may be submitted for possible publication in a CEVI book, dedicated to this conference by Springer Verlag, or inclusion in the Central European Review of Economics and Management. All submitted papers will be subject to a blind peer review process. Further information regarding conference organization and accommodation, travel arrangements, fees and activities will be published on the conference website in due course.

For any inquiry regarding the submission process and registration at the conference please contact Prof. dr. James Thewissen (UCL) by e-mail at: james.thewissen@uclouvain.be

