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The current issue is the first of the eleventh volume of the *Athens Journal of Business & Economics (AJBE), published by the Business & Law Division and the Economics Unit of Athens Institute.*

Gregory T. Papanikos
President
Athens Institute

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- Submission of Paper: **2 June 2025**

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Sustainability and the UK's Leading Clothing Retailers

By Peter Jones[*]

'As consumers seek products that cause minimal environmental harm and bring about positive social impact, and as awareness of supply chain impact grows, retailers must embrace sustainability.' (Vadakkepatt et al. 2021)

The UK's clothing retailers have a global reach which embraces a range of elements including, the production of the raw materials, a variety of treatment and manufacturing processes, retailing, and consumption, and all these elements face a variety of environmental and social challenges, which are increasingly in the public eye. With this in mind, this paper offers an exploratory study into how the UK's leading clothing retailers are publicly addressing sustainability. The paper reveals that the leading clothing retailers addressed a wide range of issues including strategic corporate commitment; climate change and greenhouse gas emissions; environmental protection; the circular economy; protecting workers in supply chains; diversity, equity and inclusion; health and safety; and links with communities and charitable donations. More generally, the author offered three sets of wider reflections, focused on the different meanings of sustainability and the relative importance of business drivers vis-à-vis environmental and social sustainability drivers; the aspirational and expectational nature of many of the selected companies' approaches to sustainability; and tensions between sustainability and economic growth.

Keywords: *Clothing retailers, sustainability, strategy, circular economy, UK*

Introduction

Clothing retailing in the UK embraces a range of elements within its value chain, including, the production of the raw materials, a variety of treatment and manufacturing processes, retailing and consumption. All these elements face a variety of environmental and social challenges. The production of raw materials, spinning these materials into fibres, weaving fibres into fabrics, dyeing, and garment production require large volumes of water, as well as chemicals, notably pesticides and insecticide, and the pollution generated by garment production has a major impact on the health of local people, animals and ecosystems. Widespread concerns have been expressed about working conditions, notably human rights and modern slavery, in textile and clothing manufacturing factories in retailers supply chains. Here, consumer demand for cheap clothes and fast fashion is seen to be driving the clothing retailers' business model which is based on cheap labour, and low prices. Abbatte et al. (2023), for example, claimed, *'clothing manufacturing and transportation produce a large volume of waste and high*

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greenhouse gas emissions, often taking advantage of cheap labor in developing countries. As a result, stakeholders are becoming more aware of the effect of the textile, apparel, and fashion industries on the climate and human rights, thus pushing businesses to mitigate their environmental damage.'

At the same time, western consumers' clothing shopping behaviour generates the emission of greenhouse gases associated with shopping journeys and online shopping deliveries, and is more generally seen to be part of unsustainable patterns of consumption. In short, the transition to sustainable patterns of development within clothing retailing faces a variety of pressing challenges, which are increasingly in the public eye. Almost a decade ago, Bostrom and Micheletti (2016) recognised that '*textiles and clothing now play a key role in the global public discourse on climate change, chemical society, water shortage, and human rights. Their production and consumption raise several questions and worries that create challenges about how people live their political, social, and economic lives. Many of the challenges concern several common societal and private practices and the role of various and often conflicting values associated with production and consumption.'* Further, Bostrom and Micheletti (2016) argued that *'conventional clothing retailers must take more responsibility for bringing sustainability values into their marketing strategies.'*

The UK is one of the world's largest consumers of clothing and though there were over 12,000 clothing retailers in 2021 (Statista 2023), the UK's clothing retailing sector has become very concentrated. A century or so ago, clothes were made by multiple tailors and sold in small independent shops, but now the retail market is dominated by a relatively small number of large retailers who have national networks of outlets, including Next, Primark and JD Sports who specialise in clothing, and Marks and Spencer, the John Lewis Partnership and Asda, who sell a wider range of merchandise as well as clothing,~~,~~ and source their clothing ranges from the world's leading clothing producers, including China, India, Bangladesh, Vietnam, Pakistan, Turkey, Cambodia, and Indonesia. With this in mind, this paper offers an exploratory study into how the UK's leading clothing retailers are publicly addressing sustainability. The paper includes, a short literature review, a description of the frame of reference and method of enquiry employed to gather the empirical information for the study, an examination of how the UK's top ten clothing retailers are addressing sustainability, some reflections on a number of wider issues, and a conclusion.

Literature Review

The academic literature on sustainability in clothing retailing covers a wide range of issues, but a brief review of that literature identified a number of interlinked themes, namely, retail sustainability strategy; consumer behaviour and so-called fast, and slow, fashion; supply chains; consumer behaviour; and the circular economy. These themes help to set an academic context for the paper.

Peters and Simaens (2020) focused on a textile and clothing company to investigate integrating sustainability into corporate strategy. Their findings

revealed a number of institutional, organisational and individual drivers of, and barriers to, the integration of sustainability into the corporate strategy of a German based clothing retailer. While the case company was successful in integrating sustainability into all relevant processes, one of the main obstacles was the inability, or unwillingness, of many customers to pay higher prices for sustainable products. In conclusion, the authors argued that if sustainability is to be successfully integrated into corporate strategy it must be deeply anchored in all departments, and into a company's daily tasks.

Claxton and Kent (2020) used a mixed method format based on semi-structured interviews and a quantitative survey of designers, to advance understanding of how the management of fashion design strategies could contribute to environmental sustainability, and their objectives were to investigate how fashion businesses use environmentally sustainable strategies and how designers contribute to the development of sustainable products. The research demonstrated the relatively limited influence of designers on sustainable fashion strategy and their engagement at a tactical organisational level, and in conclusion a model was developed for the integration of designers into the management of sustainable fashion business.

Botwinick and Lu (2022) used regression analysis to explore retailers' merchandising strategies for recycled clothing based on apparel items sold in the US retail market from 2018-2021. Their findings revealed that Us retailers adopted distinct product assortment strategies for clothing made from recycled materials in terms of clothing in terms of colours, design patterns and product categories, compared with regular new clothing. Botwinnick and Lu (2022) also suggested that US retailers were more likely to price recycled clothing lower than the market average, but more likely to target them for the luxury and premium market segments, and claimed that their research revealed the necessity of improving recycling technologies and of changing consumers' perceptions of recycled clothing's values.

de Oliviera et al. (2022) looked to explore customer perceptions of sustainability in two different stores, the one specialising in slow fashion, the other in fast fashion, in Brasilia. Their findings revealed that, in general, customers did not have knowledge of the sustainability practices adopted by the retailers, but that for 78% of the fast fashion customers, and 91% of the slow fashion customers, customers perceptions changed positively once they were appraised of the retailers' sustainability practices. However, the research also suggested that while customers believe that retailers should pursue sustainable practices, they were unwilling to pay a higher price for a sustainable product, and the authors concluded that much remains to be done if sustainable products are to be seen a competitive by consumers.

Seock et al. (2024) claimed that slow fashion had emerged as a response to the environmental and ethical problems of fast fashion, but argued that customers' purchase behaviour lagged behind their awareness of these problems. Their research looked to explore the impact of environmental sustainability consciousness, including knowledge and attitude, on Generation Z and Millennials' slow fashion practices. The findings suggested that there was a critical link between

environmental consciousness and sustainable consumption practices in fashion, and bridged the gap between knowledge and attitude and consumer buying behaviour in the context of the emerging slow fashion trend.

In outlining *'the environmental price of fast fashion'*, Niinimaki et al. (2020) identified a range of major environmental impacts, including water use, chemical pollution, carbon dioxide emissions, and waste, and outlined the need for fundamental changes in the fashion business model, the introduction of sustainable practices throughout the supply chain, and a shift in consumer behaviour, which must include decreasing clothing purchases and increasing garment lifetimes. The authors argued that these changes stress the need for an urgent transition back to slow fashion, minimizing and mitigating the detrimental environmental impacts, so as to improve the long-term sustainability of the fashion supply chain. Jung and Jin (2016) explored how slow fashion attributes, namely, equity, authenticity, functionality, localism and exclusivity, increased customers' intentions to buy, and to be prepared to pay a premium price for, slow fashion products

Arrigo (2020) investigated the global sourcing strategies of fast fashion retailers in an attempt to ascertain if they had changed over time to embrace sustainability considerations. This work is particularly important as fast fashion is one of the main sources of public criticism about low transparency and unsustainability in fashion supply chains. The findings revealed that fast fashion retailers identified sustainability as a key element in selecting sourcing locations, since sustainability issues at suppliers' factories may represent relevant hidden costs. Miotto and Youn (2020) looked to examine the impact of fast fashion's sustainability collections on corporate legitimacy. Their findings revealed that fast fashion retailers' sustainable collections not only had a positive impact on corporate legitimacy, but that such collections also had a positive influence on customers' brand trust and purchase intentions.

Talay et al. (2022) observed the growing power of retailers in the fashion supply chain, in their study of the asymmetric relationships between large UK retailers and small suppliers. The authors adopted a qualitative approach which drew on the experiences of 10 fashion suppliers and two high street fashion retailers. The findings suggested that the asymmetric relationships in the supply chains helped to reduce the environmental impacts of fashion products and but that in the UK, increased fashion sales volumes, short lead times, and the continuous evolution in fast fashion trends meant that consumers retained clothes for less than their expected lifespan, and as such, had an impact on environmental and social sustainability.

Byrd and Su (2020) investigated US consumers' perceptions of, and behaviour towards, apparel labels, and environmental and social apparel. Their findings indicated that while customers expressed positive sentiments towards apparel sustainability, they lacked the knowledge of socially and environmentally practices within the apparel industry. More generally, the authors suggested that consumers had only limited knowledge of environmental, sustainable and social apparel or what such terms meant, and were not aware of the retailers and brands that sold such garments, nor of the validity of the retailers' claims about them. In addition, Byrd and Su (2020) argued that retailers and brands who want to achieve

success with their sustainable ranges, will need to find new ways to target their market by accurately labelling products and educating consumers about claims made on the labels.

Dangelico et al. (2022) investigated the factors which influence green behavioural intentions in the clothing industry, through a survey of over 2,500 Italian consumers. This research focused on the influence of consumers' environmental concerns, perceived value of products, and consumers' direct and indirect experiences of the product, on purchase intentions and on willingness to pay a premium price for sustainable fashion products. The findings revealed that environmental concern and perceived positive value affected purchase intention, a willingness to pay a premium price regardless of the type of eco-materials used for the product, whereas direct and indirect experiences have different effects based on the specific eco-materials use, and, more generally, that green consumer behaviour is strongly dependent on consumers' socio-demographic characteristics.

Having argued that the fashion industry is one of the world's most wasteful consumer industries, Brydges (2021) investigated how the Swedish fashion industry has implemented circular economy principles. He investigated the sustainability challenges facing brands and looked to determine the stages in the supply chain, namely design, production, and retail, and where these challenges occurred, and then mapped circular economy strategies across the key stages of take, make and waste. The author suggested that if the fashion industry was to move towards circularity, then retailers and brands needed to integrate these strategies across supply chains, rather than just focusing on the waste stage. Research by D'Adamo et al. (2022) on the second-hand market in the fashion industry demonstrated that garment collection is not necessarily the best practice for the circular economy. Rather, close collaboration between manufacturers and retailers in the supply chain was required to move the industry towards sustainable production and consumption. The findings also suggested that harvesting management, and internal competition on low-cost collections, are critical business drivers, while responsible consumption is an opportunity for consumers.

Dissanayake and Weerasinghe (2021) argued that despite the strong desire and demand of the fashion industry to move to a more circular business model, less is understood about the concepts and application of the circular economy, in the fashion business. Their work looked to offer a framework of strategies that facilitated the move from linear to circular fashion. This framework identified, and discussed, four key strategies, namely resource efficiency, circular design, product life extension, and re-use, to facilitate the transition to circular fashion. The design stage was seen to be crucial and involved design for longevity, for customisation, for disassembly, for recycling, and for composting. Frei et al. (2020) investigated how far sustainable practices and circular economy concepts have been implemented in online retail returns systems. They identified vulnerabilities, barriers, and challenges to the implementation of sustainable, circular practices, and suggested ways to overcome them, in the belief that sustainability, loss prevention, and profit optimisation, can go hand in hand with the right approach to the organisation of the reverse supply chain.

Frame of Reference and Method of Enquiry

In the light of the introduction to this paper, the author addressed a single research question, namely, how are the leading clothes retailers within the UK publicly addressing sustainability. In order to answer this question, a simple frame of reference and method of enquiry were adopted. The UK's leading ten clothing retailers, namely Next, JD Sports, Primark, Marks and Spencer, Asda, TK Maxx, The John Lewis Partnership, ASOS, Sports Direct, and Tesco, as measured by market share, and as listed by Retail Economics (2023), were selected for study. As the leading clothing retailers in the UK they might be expected to reflect good practice in addressing sustainability. Brief pen pictures of the selected companies are outlined below.

Next is a multinational UK clothing and footwear retailer, originally founded in 1864. The retailer trades from some 700 stores, of which 500 are in the UK, where it is the country's largest clothing retailer, with a further 200 in mainland Europe, Asia and the Middle East. JD Sports is a UK sports fashion retailer, founded in 1981. The company trades from 3,400 stores principally in the UK, mainland Europe, North America, and the Asia Pacific region. Primark, a leading clothing international retailer, founded by Associated British Foods in 1969. has over 400 outlets across the UK, Ireland, mainland Europe and the US. The retailer's product range includes menswear, womenswear, and children's' wear. Marks and Spencer is a UK multinational retailer, established in 1894. The company's product range includes, clothing, food, and household goods. Asda is a UK supermarket retailer founded in Yorkshire in 1965, it trades from over 600 locations within the UK, and the company's product range includes food, general merchandise and clothing. The George at Asda brand is one of the UKs leading clothing brands, and is available within the company's stores and in some locations in free standing outlets.

TK Maxx, a subsidiary of the American apparel and home goods company TJX Companies, is an off-price retailer, that trades from over 350 stores within the UK and offers a range of clothing and accessories from various brands at discounted prices. The John Lewis Partnership, founded in 1929, operates a number of department stores and a large chain of supermarkets and convenience stores. The company has 52 department stores in the UK, and offers clothing and accessories including their own brands, as well as designer brands, such as Ted Baker and Whistles. ASOS is an online retailer founded in 2000 that offers clothing, accessories and cosmetics, which are targeted at young adults. The company's website sells over 850 brands and distributes it range worldwide, from fulfilment centers in the UK, mainland Europe and the US. Sports Direct, founded in 1982 and part of Frasers Group since 2019, trades from over 480 stores throughout the UK, and offers a wide range of men's' women's and children's sportwear, clothing, and footwear. Tesco, founded in 1919, is a UK based multinational groceries and general merchandise retailer and its product range includes food, books, clothing, electronics, furniture, toys, and software. Its range of clothing, carried under the F&F brand, includes womenswear, menswear and children's wear. While ASOS trades

exclusively online, the other nine clothing retailers offer their ranges in store and online.

The author conducted a series of Internet searches, using sustainability report and the names of the selected ten retailers, as key terms on Google in November 2023. This search revealed considerable variety in the ways the selected companies publicly addressed sustainability. Five of the selected retailers, namely, Next, Primark, Marks and Spencer, Asda, and the John Lewis Partnership, had posted dedicated a sustainability reports or corporate social responsibility reports/ environmental, social and governance reports, two retailers, namely JD Sports and Tesco, had posted annual reports which contained material on sustainability, one company, ASOS, had posted a report entitled Fashion with Integrity, which contained material on sustainability, and the two remaining retailers, TK Maxx and Sports Direct had posted some information on their approach to sustainability. The retailers' websites are listed under Corporate Sources at the end of the paper.

These reports and information, collectively referred to as sustainability reports from now on, provided the source material for this paper. The reports were well structured and clearly signposted, and the author took the considered view that a detailed content analysis would be unnecessary in an exploratory study. Rather, a close reading of the source material was undertaken and a number of major themes were identified. As the reports are in the public domain, on the selected companies' websites, the author felt that it was unnecessary to seek formal permission to use them. At times, the author explicitly quotes the selected companies' reports, and here the aim is to add authenticity to the narrative by exploring how the selected clothing retailers publicly expressed, and looked to evidence, their approaches to sustainability, in their own words.

Findings

The sustainability reports posted by the selected retailers varied in scope and content, but rather than reviewing each report in detail, the author looked to identify, and draw out, a number of general themes to provide a narrative account to capture how the clothing retailers are publicly addressing sustainability. More specifically, the author identified a number of overlapping themes, namely, strategic corporate commitment; climate change and greenhouse gas emissions; reducing more general environmental impacts; the circular economy; protecting workers in supply chains; diversity, equity and inclusion; health and safety; and links with communities and charitable donations.

Strategic corporate commitment was articulated in a variety of ways. In his Chief Executive Officer's Introduction to Marks and Spencer's 2023 Sustainability Report, Stuart Machin claimed *'sustainability is part of how we do business at M&S – it's in our DNA'*, and that *'it runs through all our strategic priorities'* (Marks and Spencer 2023). In his Chief Executive's Foreword to ASOS's (2023) report, *'Fashion with Integrity',* Jose Antonio Ramos, claimed *'we want to continue to give our customers the fashion they want, when they want it. At the same time, we want to be a business that cares for people, while working to*

reduce our impact on the planet. Achieving these aims together is a huge challenge, but it is not impossible. We can and must do both, as we believe that there can be no future for fashion without sustainability.' Perhaps more simply, Tesco (2023) reported *'we remain committed to embedding sustainability across all our business operations.'*

All the selected clothing retailers identified climate change as a major, perhaps, the major, challenge to sustainability. Asda (2023), for example, recognised that *'climate change is the defining crisis of our time, it's happening much more quickly than previously anticipated and will have a major impact on our business.'* In a similar vein, Tesco (2023) reported *'climate change remains the biggest and most complex challenge facing the world, with its impacts felt across our supply chain, operations, and the communities we serve.'* More specifically, some of the selected retailers reported on their greenhouse gas emissions targets. Next, for example, reported its commitment to reduce Scope 1 (which occur within a company and are within its control) and Scope 2 emissions (which occur when energy is produced and supplied from outside the company) by 55% by 2030, against a 2016/2017 baseline, as part of its goal to achieve net zero emissions by 2040. TK Maxx (undated) claimed to be committed to *'continue to reduce our greenhouse gas emissions by implementing energy efficiency initiatives and purchasing renewable energy for our stores, offices, and processing centres.'*

The selected retailers' commitments to reducing their more general environmental impact included a number of elements. Tesco (2023), for example, reported *'working to reduce our environmental impact'*, and more specifically, on its ambition *'to halve the environmental impact of the average shopping basket'*, by 2030. The John Lewis Partnership (2023) recognised *'nature is the basis of everything we do as individuals, businesses and societies',* and claimed *'which is why protecting biodiversity is at the heart of the Partnership.'* Primark (2023) reported commissioning a consultancy to conduct a biodiversity risk assessment of its operations and claimed that *'given that cotton is our most widely used raw material, our biodiversity strategy has cotton at its core.'*

The clothing retailers' supply chains use large volumes of water, and water stewardship is an important element in managing environmental impact. Primark (2023), for example, acknowledged *'water is a critical natural resource within the fashion industry – from the irrigation of the cotton fields to the dyeing and finishing of our fabrics and materials. It is vital that we manage it effectively. Ensuring factories of our suppliers manage their water use effectively and control their wastewater responsibly, is crucial for helping to reduce our environmental impact as a business.'* In reporting on water stewardship, J D Sports (2023) noted that *'the growth and extraction of raw materials, including cotton, are water intensive activities'*, and that by adopting more sustainable behaviours within its supply chain, the retailer had reduced its water usage and environmental impact.

A commitment to the circular economy was expressed by a number of the selected clothing retailers, but this commitment was often focussed narrowly on waste. Under the banner *'Moving Towards Circularity'*, Next (2023), for example, reported it was *'supporting the transition to a more circular economy by designing, producing and selling products that limit pollution and waste, and help*

to keep materials in use for longer.' In looking to evidence its commitment to circularity Next outlined that it was working to reduce packaging, using customers' returned packaging to create new packaging, and to develop takeback schemes to ensure valuable resources were kept in circulation. The John Lewis Partnership (2023) claimed *'our products and business must be responsible and sustainable, designed with circularity in mind and eradicating waste as we go.'*

Wider commitments to circularity were also expressed by some of the selected clothing retailers. Asda (2023), for example, argued that *'circularity is a key pillar of our George clothing sustainability strategy'*, suggested that its *'customers were more likely than the average UK customer to participate in circular initiatives, such as repairing, donating, buying second-hand and selling used items',* and claimed that *'as we develop our ranges, we are designing with longevity in mind, aiming to ensure our products last longer, can have a second life, and at the end of life be recycled or disposed of in a responsible and low-impact way.'* JD Sports (2023) reported developing its *'supply chain to extend material and product life at every opportunity'*, and while the company acknowledged that *'this is not circularity by definition',* it argued that *'extending product life represents an investment in the same principles that support the circular economy.* Under the headline, *'Recycling and Repairing'*, Sports Direct (2022) offered advice to customers on *'repairing damaged items, giving clothes a second life, and upcycling.'*

Protecting workers in supply chains poses a major challenge for clothing retailers and a number of them have explicitly addressed remuneration and working conditions, health and safety at work, human rights, and modern slavery. Under the banner *'Improving People's Lives'* Primark (2023) acknowledged its commitment to *'pursuing a living wage for workers in our supply chains'*, and reported that *'our approach builds on what is already a well-established process to monitor the payment of workers' wages'*, and that *'this is a key aspect of social audits conducted in our suppliers' factories through our Ethical Trade programme.'* In a similar vein, JD Sports (2022) reported that its ethical code of practice stipulates that *'living wages are paid in line with local laws and for a standard working week, overtime must be paid at premium rate'*, that *'the organisation shall respect the right of personnel to a living wage and ensure that wages for a normal work week, not including overtime, shall always meet at least legal or industry minimum standards, or collective bargaining agreements'*, and that *'wages shall be sufficient to meet the basic needs of personnel and to provide some discretionary income.'* JD Sport's ethical code of practice also emphasises freedom of association and the right to collective bargaining, that working hours must not be excessive and must be voluntary, and that regular employment be provided. Here again, the company reported that factories in its supply chain are independently audited.

Marks and Spencer (2023) reported *'we continuously review and improve our practices to ensure we are upholding our standards and respecting the human rights of the people behind our products. This means working directly with our supplier partners to address local issues, and in collaboration with the wider industry to address systemic issues.'* Next (2023) reported *'the violation of human*

rights anywhere in our operations is unacceptable and we deal firmly with any infringements identified in our supply chain.' Tesco (2023) emphasised its commitment *'to upholding human rights and support in full the United Nations Universal Declaration of Human Rights and the International Labour Organization Core Conventions on freedom of association and collective bargaining, forced labour, child labour and discrimination at work.'* Further, Tesco (2023) reported *'our contractual agreements with suppliers clearly articulate the expected standards related to human rights and modern slavery.'*

Some, but not all, of the selected clothing retailers, reported on their policies on modern slavery. Next (2023), for example, emphasised *'we will not tolerate any instance of modern slavery in our business or in our supply chain. Next products should be made by workers who are treated honestly and fairly for the work they undertake and whose human rights and wellbeing are respected.'* In looking to evidence this commitment, Next (2023) reported that it had *'worked with 13 factories to successfully remediate modern slavery issues'*, and *'an additional four sites are being supported through an agreed remediation process'*, and that it had *'disengaged seven factories where remediation of modern slavery issues had not been achieved to an acceptable level.'* Primark (2023) reported that *'we ban all forms of modern slavery, including child labour, forced labour and human trafficking'*, and that *'we publish our Modern Slavery Statement annually.'* This statement is accessible via a hyperlink from the company's sustainability report.

Health and safety in the workplace were issues for many of the selected clothing retailers and while some of the retailers reported their commitments to their own workers, for others such commitments also included their supply chains. Next (2023), for example, emphasised that *'colleagues' health, safety and wellbeing is always our top priority'*, and that the company *'firmly believe that if our people are healthy, happy and engaged, their performance will be optimised, benefitting both themselves and our business.'* More expansively, JD Sports (2023) claimed *'the health and safety of workers within all areas of our supply chain is of paramount importance to us'*, and that all suppliers will *'establish documented procedures to detect, prevent, minimise and eliminate potential risks to the health and safety of personnel. The organisation shall maintain written records of all health and safety incidents that occur in the workplace and in dormitories provided by the organisation, whether it owns, leases or contracts dormitories from a service provider.'*

A commitment to diversity, equity and inclusion featured in the sustainability reports of many of the selected retailers. ASOS (2022), for example, emphasised its *'aim to drive diversity, equity and inclusion across every aspect of our business'*, while under the headline *'Diversity and Inclusion',* Marks and Spencer (2023) claimed *'as an employer of more than 64,000 people, M&S is committed to building a culture where everyone is listened to, has a voice and feels they can be their best.'* Under the banner *'Championing Diversity and Inclusion'*, Primark (2023) claimed *'it's important that all our people are treated with dignity and respect, which means listening to our colleagues and learning what's important to each person'*, that *'our workforce is a diverse collection of individuals, all with their*

own stories, viewpoints, ideas and insights. It makes us a stronger, more adaptive and resilient business', and that *'we are also careful to understand local variations and comply with relevant legislation in each market.'* Primark (2023) also reported its commitment *to 'promote equal opportunities for women.'* In addressing this commitment, the retailer emphasised that *'women account for the majority of its global supplier factory workforce'*, and that the company's goal is *'to strengthen the position of women in the garment industry through skills development and addressing barriers to progression by 2030'* (Primark 2023).

A number of the selected clothing retailers reported on their links with local communities and on their charitable donations, as part of their sustainability commitments. The John Lewis Partnership (2023), for example, reported that *'Our Community Matters'* programme supported charities and good causes and that its recent focus had been on health and well-being, school holiday food poverty, and vulnerable children. In addressing *'Supporting Our Communities'*, Next (2023) emphasised its commitment *'to support causes that make a real difference. We particularly focus on supporting charities and organisations that have an impact in the countries and communities we source from and operate in'*, and reported on its approach which looked to *'provide donations that are of the most benefit – this can be in the form of financial or product donations, expertise, knowledge, or time'*, and *'to support charities for a number of years with a specified annual donation, as this commitment helps them plan their work with confidence and allows us to become strategic partners.'*

Discussion

The sustainability of the clothing industry, and more specifically of clothing retailing, is increasingly in the public eye, and the findings reported above revealed that the UK's leading clothing retailers publicly addressed a number of environmental and social challenges in their sustainability reports. That said, a wider set of issues, namely, the concept of sustainability and the relative importance of business drivers, vis-a-vis environmental and social sustainability drivers; the aspirational and expectational nature of the clothing retailers' commitments to sustainability; and the relationship between sustainability and economic growth, merit attention and discussion.

At the outset it is important to recognise that sustainability is a contested concept, which *'means different things to different people'* (Aras & Crowther, 2008), and while some definitions are rooted in ecological principles, others include social and economic, as well as environmental, goals, and look to embrace equity in meeting human needs. Typical of the first set is Sutton's (2004) definition of environmental sustainability *as 'the ability to maintain things or qualities that are valued in the physical environment',* while the second set is reflected in McCann-Erickson's (2007) definition that sustainability *'is a collective term for everything to do with the world in which we live'*, and *'is about consuming differently and consuming efficiently.'*

In some ways, the selected clothing retailers' approach to sustainability can be interpreted as being built around economic efficiencies and thus to reflect the demands of their businesses, as much as fundamental concerns for the conservation of natural resources, the maintenance of ecosystems, the well-being of workers, or the communities in which the retailers trade and source their products. While a number of the clothing retailers' various measures to implement efficiencies in the use of both energy resources and water resources, they also produce cost savings. In a similar vein, commitments to diversity and to health and safety in the workplace can be seen to promote loyalty and stability amongst the workforce, while investment in the communities where clothing retailers trade and source their products, will help to produce positive attitudes towards those retailers.

Many of the selected clothing retailers' commitments can be seen to be both aspirational and expectational. Aspirational, in that, many of the sustainability reports map out the retailers' ambitions, for example, for reductions in greenhouse gas emissions, halving the environmental impact of a typical shopping basket, plans to ensure that products last longer, and goals designed to strengthen the position of women and to address barriers to their progression. Whether such commitments can be sustained, in the face of difficult future trading conditions remains to be seen. The clothing retailers' reported commitments to sustainability could also be seen as expectational, in that suppliers were expected to ensure their compliance with the retailer's corporate policies, for example, on the role of women within the garment industry, on ensuring the responsible use and management of water resources, and on human rights and modern slavery. In an attempt to verify that suppliers are complying with their supply chain policies, a number of the selected retailers reported employing a variety of audit processes. Here, it is important to recognise that though widely used in industries with complex and geographically diverse supply chains, the role of auditing to verify compliance has attracted considerable criticism. LeBaron et al. (2017), for example, argued that *'retail and brand companies shape the audit regime in ways that legitimate and protect their business model'*, which *'preserves the retail business model that hinges on rewards from cheap labor, cheap goods, low prices, and short-term purchase contracts.'*

The findings revealed that while some of the selected clothing retailers focussed their commitment to the circular economy narrowly on waste management, others were more broadly focussed on the product life cycle, but any transition to a circular model would constitute a dramatic change in the ways in which consumers approach consumption, and could see the emergence of a *'new consumption culture'* (Korhonen et al. 2018). Indeed, the emergence of such a new culture of consumption where the focus would be on co-operative, rather than individual, endeavour, is seen to be central to the circular economy, with *'user groups and communities sharing the use of the function, service and value of physical products.'* However, there is little evidence in the clothing retailers' sustainability reports that they are committed to fundamental changes in their current business models. While Marks and Spencer, for example, do facilitate a clothes recycling scheme, as noted earlier, at the present time, the company seems

unlikely to radically change their current business model to fully accommodate reuse and recycling, at what would be the expense of that model.

There are, arguably fundamental, tensions between sustainability and economic growth, and here the issues of sustainable consumption and the current structure of market economies loom large. In many ways, clothing retailing and more particularly fast fashion, epitomises unsustainable consumption. The selected clothing retailers' business models, are based on continuing growth and aggressive marketing strategies, essentially to promote consumption, but such growth, dependent as it is on the continuing depletion of the earth's finite natural resources, is incompatible with sustainability. However, major moves to reduce current levels of consumption in western societies, could be seen by many as a retrograde step, in societies where consumption is prized, and perhaps more tellingly, where consumption has become part of many people's identity. Major changes in the levels of consumption might also be seen to pose challenges for the current structure of market economies. In looking to address such challenges Jackson (2010) argued *'it is entirely fanciful to suppose that deep emission and resource cuts can be achieved without confronting the structure of market economies',* while Mansfield (2009) claimed that mainstream approaches to sustainable development fail to recognise *'the political nature of sustainability.'*

Conclusion

This paper has presented an exploratory narrative on how the UK's top ten clothing retailers are publicly addressing their approaches to sustainability. Such approaches embrace a wide range of issues, namely, strategic corporate commitment; climate change and greenhouse gas emissions; environmental protection; the circular economy; protecting workers in supply chains; diversity, equity and inclusion; health and safety; and links with communities and charitable donations. More generally, the author offered three sets of the reflections focused on the different meanings of sustainability and the relative importance of business drivers vis-à-vis environmental and social sustainability drivers; the aspirational and expectational nature of many of the selected companies' commitments to sustainability; and tensions between sustainability and economic growth. All three sets of reflections have important implications for clothing retailers as they look to pursue the transition to a more sustainable future, and to respond to environmental and social challenges the clothing industry increasingly faces from its stakeholders, and from the public at large.

The paper has a number of limitations, not least in that it is drawn exclusively from Internet sources, in that it involves the authors' selection from these sources, and that in offering a narrative of how the selected clothing retailers publicly addressed sustainability, it involves considerable generalisation. Nevertheless, the author believes that the paper not only offers a valuable exploratory picture of the sustainability challenges facing clothing retailers within the UK, and of the corporate strategies and measures to address these challenges, but that it may also provide a platform for future research. Future research agendas might, for

example, include detailed empirical investigations into how UK' leading clothing retailers are looking to develop their sustainability strategies .At the same time, research into UK consumers' perceptions of the nature and importance of sustainability for clothing retailers, and into the extent to which consumers may be willing to change their patterns of buying behaviour and store patronage in the light of increasing awareness of the varied environmental and social challenges facing clothing retailers may also pay dividends.

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Is a Greek Economic Miracle in the Making in the 21st Century?

By Gregory T. Papanikos[*]

In the 1950s, many economists were discussing a Greek economic miracle, second only to Japan. The 1950s followed a catastrophic decade (the 1940s) with four years of the Second World War (1940-1944) and another five of civil war (1944-1949). The 2010s were also a catastrophic decade, but this time the initiator was not a foreign army but a foreign economic crisis termed the Great Recession. As was the case in the 1940s, the end of the foreign economic invasion was followed by a civil war on how to better manage the economy. The civil war of the 1940s was between communists and non-communists, and in the 2010s, it was between Europeanists and non-Europeanists. This second civil war ended in 2019 with a victory for Europeanists. The question is whether the end of this civil war will spark another economic miracle in the 2020s similar to that of the 1950s. This issue is addressed in this paper.

Keywords: *Greece, growth, unemployment, inflation, Phillips curve, Okun's Law, eurozone, Great Recession.*

Introduction

The Great Recession started in 2007 in the USA, spread to Europe, and hit Greece very hard, primarily in the beginning of the 2010s. This was a "foreign invasion" with unprecedented economic effects during peacetime. Its economic effects can only be compared with the foreign invasion of the 1940s during the Second World War. I have argued elsewhere that, contrary to what many others claimed at the time by putting the blame on the Greek governments, the real reason the Greek economy was hit so hard was an overvalued Greek real effective euro exchange rate (Papanikos, 2015), which resulted from a restrictive monetary policy imposed on the European Central Bank, primarily by Germany. However, as I have detailed in my book (Papanikos, 2014), the Greek fiscal policy authorities increased public spending by raising public wages, resulting in an increase in public debt. As a result, both monetary and fiscal policies were heading in the wrong direction. The bad monetary policy of the eurozone and the poor fiscal policy of the Greek government explain why the Greek economy was severely impacted when the economic crisis "invaded" Greece.

The purpose of this paper is to look beyond the economic crisis of the 2010s. Drawing an analogy with the 1940s and 1950s, this paper discusses whether the current decade of the 2020s marks the beginning of another Greek economic miracle. The end of the 2010s was also marked by another external shock that

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drastically reduced Greek GDP in 2020, but this time, it was the pandemic that affected all countries. Once again, Greece was hit the hardest, and this cannot be blamed on either the eurozone or the Greek policy authorities. In any case, this was a short-term shock that was immediately balanced by the high economic growth of 2021.[1]

In addition, drawing a similarity with the early 1950s when Greece was affected by the Korean War (1950-1953), another war affected the Greek economy in the early 2020s. The Russian invasion of Ukraine that started in February 2022 has affected the Greek economy by raising energy and other prices, as reflected by the increase in the Greek inflation rate.

This study utilizes data from Eurostat, encompassing actual figures and forecasts up to 2025, to address the question of whether this decade will be marked by a Greek economic miracle in the 21st century. The analysis is descriptive and purely speculative.

The paper is organized into five sections, including this short introduction. The next section provides an overview of the economic growth of GDP and per capita GDP since the 1940s. Some important conclusions emerge that were also analyzed in more detail in my book published in Greek in 2014. The third section discusses the rate of output growth and the unemployment rate, incorporating Okun's law. The fourth section looks at the relationship between the inflation rate and the unemployment rate, including the drawing of a Greek Phillips curve. The fifth section speculates on the Greek economic prospects in the rest of the 2020s and beyond. The last section concludes.

An Overview of Greek Macroeconomic Performance since the 1940s

The first half of the 20th century was a period of wars. Greece participated in many national and global conflicts, including the 1st and 2nd World Wars, two Balkan wars, a war in Asia Minor, and all these wars culminated with the Korean War of 1950-1953. Since the 1950s, Greece, for the first time in its long history, enjoyed a prolonged period of peace. As mentioned by my favored didactic poet Hesiod (8th century BCE), peace allows cities to flourish, and so did the Greek economy since the 1950s. During this period, Greece was able to become a full member of the European Union in 1981 and joined the eurozone since its inception in 2002.[2]

But going back to the 1940s, Greece was hit hard not only because it fought the foreign invaders --the fascists and Nazis-- for four years (October 1940-October 1944) by developing one of the strongest resistance movements in Europe but also by joining forces with the Allied powers to fight in North Africa and the Mediterranean Sea, participating in the critical battle of El Alamein in North Egypt.

[1]I have examined the impact of the pandemic on the Greek economy and on the European Union in Papanikos (2020b, 2020c, 2021, 2022a).

[2]In Papanikos (2022b), I have evaluated the first two decades of Greece's membership in the eurozone.

After its liberation from the Nazi occupation (12 October 1944), Greece immediately entered into a bloody civil war for another five years, from November 1944 to August 1949. No other European country saw its economy destroyed to the extent of the Greek economy. However, by using foreign funds, primarily as part of the Marshall Plan, Greece was able to achieve the highest rate of growth in Europe in the 1950s and 1960s, which was second in the world only to Japan. The following decades were years of peace for the first time in Greek economic history, but not years of internal political stability. However, it seems that this had little effect on the Greek macroeconomic performance.

This section looks at the data of this long period, from the 1940s to the 2020s. This has its own value from an economic history point of view. For example, many journalists and politicians compared the economic "catastrophe" of the 2010s with the economic catastrophe of the 1940s. The latter was characterized by a world war and a civil war. Thus, this is the first issue examined.

Table 1 compares the two periods: 1939-1948. If we compare the growth rates of two decades, the loss in output is very similar. During the 1939-1948 period, the Greek GDP decreased by 23.25%, which is similar to the loss in output of 21.09% during the decade of the Great Recession (2009-2018).

Table 1. *The 1940s and 2010s Compared*

Year	GDP	Growth	Year	GDP	Growth
1939	22.08	-6.53%	2009	228.6	-4.31%
1940	15.07	-31.75%	2010	216.1	-5.47%
1941	8.06	-46.51%	2011	194.2	-10.13%
1942	7.01	-13.04%	2012	180.4	-7.11%
1943	7.01	0.00%	2013	175.9	-2.49%
1944	7.01	0.00%	2014	176.7	0.45%
1945	7.41	5.68%	2015	176.4	-0.17%
1946	12.00	61.98%	2016	175.5	-0.51%
1947	16.07	33.92%	2017	177.4	1.08%
1948	16.94	5.46%	2018	180.4	1.69%
1939-1948		-23.25%	2009-2018		-21.09%

Notes: Data are in billions of constant 2015 euro. The 1940 value was not available and was estimated using the average value of the 1938 and 1940 figures.
Source: Bank of Greece (1978, Table 29, p. 207 and Table 44, p. 283) and author's calculations up to 1959 and Eurostat (AMECO retrieved 15 November 2023) after 1960.

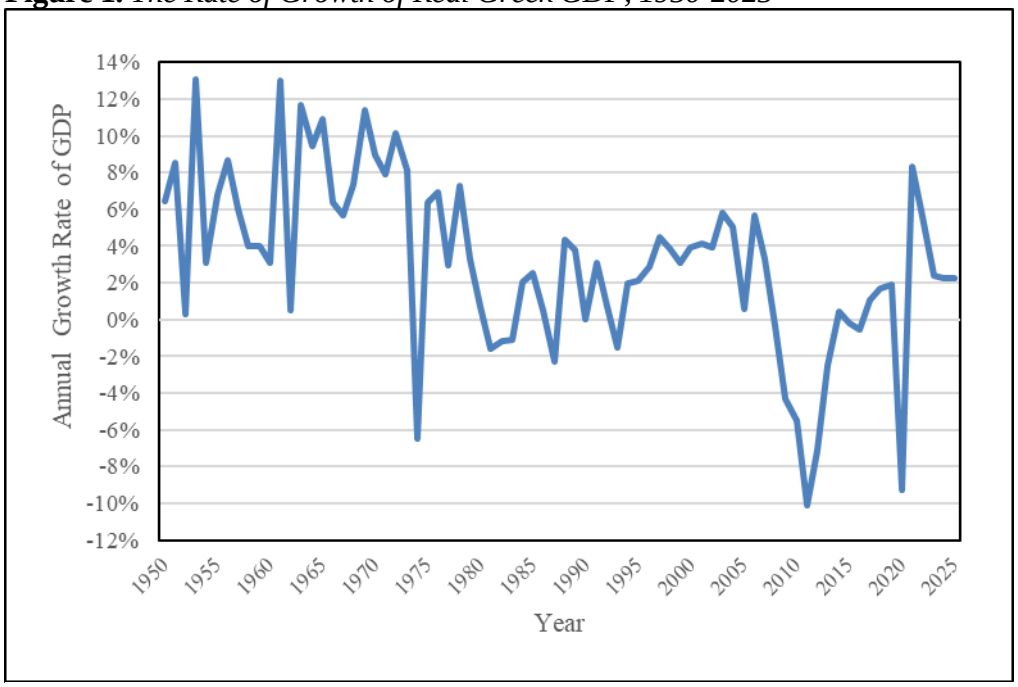
The growth rates do not tell the whole story, but the total GDP does. The drop of GDP from 22 billion to 8 billion in 1941 and 7 billion in 1942 meant that in the winter of 1941-44, Greeks were dying from famine (Hionidou, 2006). The number of people who died from famine is estimated to be about 100,000.

In 1940, the Greek population amounted to 7,344,860, an increase of 1,140,176 relative to the 1928 census. In the 1951 census, the total Greek population amounted to 7,632,801. The increase of 287,941 people was the result of adding the new territory of Dodecanese with 121,480 people.

When comparing the two periods, another important difference emerges. The latter part of the 1940s is characterized by significant growth rates, explained by the fact that the GDP reached its lowest point, even falling below the subsistence level of consumption for its population. By 1948, Greek GDP had doubled relative to 1941 but still lagged behind the GDP of 1939. This occurred despite Greece being in a civil war from 1944 onwards. It is important to note that the civil war was confined mainly to the mountainous areas of North-West Greece and had little to no effect in the main urban centers and most of the Greek countryside.

The 1950s mark the beginning of a new era for the Greek economy and the political process. Never before has Greek society experienced such a prolonged period of peace and progress. The rate of growth of Greek GDP since 1950 is depicted in Figure 1.

Figure 1. *The Rate of Growth of Real Greek GDP, 1950-2025*



Notes: Figure 1 plots the annual rate of output growth from 1950 to 2025. The data for the years 1960-2025 were extracted from Eurostat (AMECO, extraction date: 15 November 2023). The data for the years 1950-1959 were estimated using information from the Bank of Greece (1978).

The Greek economic miracle occurred in the years following the end of the civil war in 1949. There was a long period of economic prosperity from 1950 to 1973. However, as shown in Figure 1, this period is also characterized by very high economic fluctuations. The average growth rate for the period 1950-1973 was 7.31%.

In 1974, the growth rate plunged to -6.5%. The reason was the threat of war with Turkey and the collapse of the Greek dictatorship after ruling Greece for seven years (1967-1974). The period after 1974 consists of years of modest economic growth. From 1975 until the onset of the Great Recession in the Greek economy in 2008, the average growth rate for the 1975-2007 period was 2.65%. The economic fluctuations of the 1950-1973 period are larger than the economic

fluctuations of the 1975-2007 period, as measured by the standard deviations of the two growth rates, which are 0.036 and 0.025, respectively.

The Great Recession started in Greece in 2008. The GDP fell by 0.33% in 2008 and continued its decline throughout the entire decade of the 2010s. During these ten years of the Great Recession (2008-2017), the average growth rate was -2.9%. The average rate for the 1938-1947 period was 1.07%. In 2018 and 2019, positive growth rates of 1.69% and 1.88% were registered, respectively, but the pandemic of 2020 hit the Greek economy very hard, causing the GDP to fall by 9.30%.

Starting in 2021, it seems that the Greek economy is entering a new period of economic progress. I speculate that this might be the beginning of a new economic miracle, which parallels the economic miracle of the period following the end of the Greek civil war in 1949. This is examined in section five below. In the next two sections, I examine Okun's Law and the Phillips Curve as they apply to the Greek data for the 1974-2025 period.

The Greek Output-Unemployment Relationship (Okun's Law)

In 1962, Okun found that a 2% increase in output (actually an increase in aggregate demand) decreases the cyclical unemployment rate by 1%. This empirical relationship has been termed Okun's Law. Its stability and variability have been thoroughly examined across countries, economic cycles and time.

The purpose of this section is not to discuss these issues. A recent article by Porras-Arena & Martín-Roman (2023) discusses the heterogeneity of the Okun's law measurements using a meta-analysis of studies. The purpose of this section is to calculate the Greek parameter of Okun's Law for Greece and compare it with estimations of other countries. A high absolute value of this parameter indicates a strong response of the unemployment rate to output growth.

Okun's Law may be presented with the following simple regression model:

$$\Delta UR_t = \alpha + \beta GDPGR_t + \varepsilon_t$$

where ΔUR_t shows the change in the unemployment rate in period t. $GDPGR_t$ accounts for the rate of growth of GDP.

Indeed, this is a reduced-form equation derived from a production function that establishes the relationship between employment, aggregate demand, and unemployment within the context of a given total labor force, participation rates, and vacancy rates in the labor market.

As mentioned above, Okun's law is an empirical relation, and its coefficients may differ among countries due to variations in the characteristics of the economy, such as self-employment, informal (shadow) employment, sectoral employment structure, moonlighting, illegal employment, government regulations, and laws.[3]

[3]I discussed self-employment, wage rates, and corruption in the Eurozone countries in Papanikos (2023). Additionally, within the Greek context, I investigated the employment

All of these factors influence the response of the unemployment rate to aggregate demand fluctuations. Thus, one may expect significant variations in the estimates of the parameter β in the above equation across countries.

Ball et al. (2017) estimated the parameter β for 20 advanced economies, revealing significant variations. Their findings are presented in Table 2. As anticipated, all estimates of β are negative and statistically significant at the one percent level. However, substantial differences exist among the twenty advanced countries. The estimates range from a high impact of |0.852| for Spain to a low impact of |0.136| for Austria. The average value is |0.396|, with a standard deviation of 0.162.

Table 2. *20 Advanced Economies: Estimates of Okun's Law (1980-2011)*

	β		*Obs*	Adjusted R^2
Australia	-0.536***	(0.0476)	32	0.797
Austria	-0.136***	(0.0438)	32	0.213
Belgium	-0.511***	(0.0817)	32	0.543
Canada	-0.432***	(0.0374)	32	0.805
Denmark	-0.434***	(0.0471)	32	0.724
Finland	-0.504***	(0.0485)	32	0.770
France	-0.367***	(0.0441)	32	0.681
Germany	-0.367***	(0.0629)	32	0.508
Ireland	-0.406***	(0.0395)	32	0.766
Italy	-0.254***	(0.0672)	32	0.292
Japan	-0.152***	(0.0194)	32	0.654
Netherlands	-0.511***	(0.0705)	32	0.617
New Zealand	-0.341***	(0.0493)	32	0.594
Norway	-0.294***	(0.0406)	32	0.617
Portugal	-0.268***	(0.0371)	32	0.615
Spain	-0.852***	(0.0503)	32	0.899
Sweden	-0.524***	(0.0719)	32	0.619
Switzerland	-0.234***	(0.0458)	32	0.439
United Kingdom	-0.343***	(0.0495)	32	0.595
United States	-0.454***	(0.0373)	32	0.821

Source: Ball et al (2017, Table 5). *** shows statistical significance at the one percent level. Standard errors in parentheses.

I estimated the same regression equation using Greek data from 1974 to 2025. The scatter plot of the change in the unemployment rate and output growth is depicted in Figure 2. The relationship is negative, as indicated by the slope of the regression line. The estimated slope coefficient is given in Table 3. I also fitted a second-degree polynomial to the data (not shown in the table), but the squared coefficient of the GDP growth was not statistically significant.

effects of small firms in Papanikos (2004) and explored issues related to agricultural sector employment in Papanikos (2005).

Figure 2. *Scatter Plot of GDP Growth and Change in Unemployment Rate*

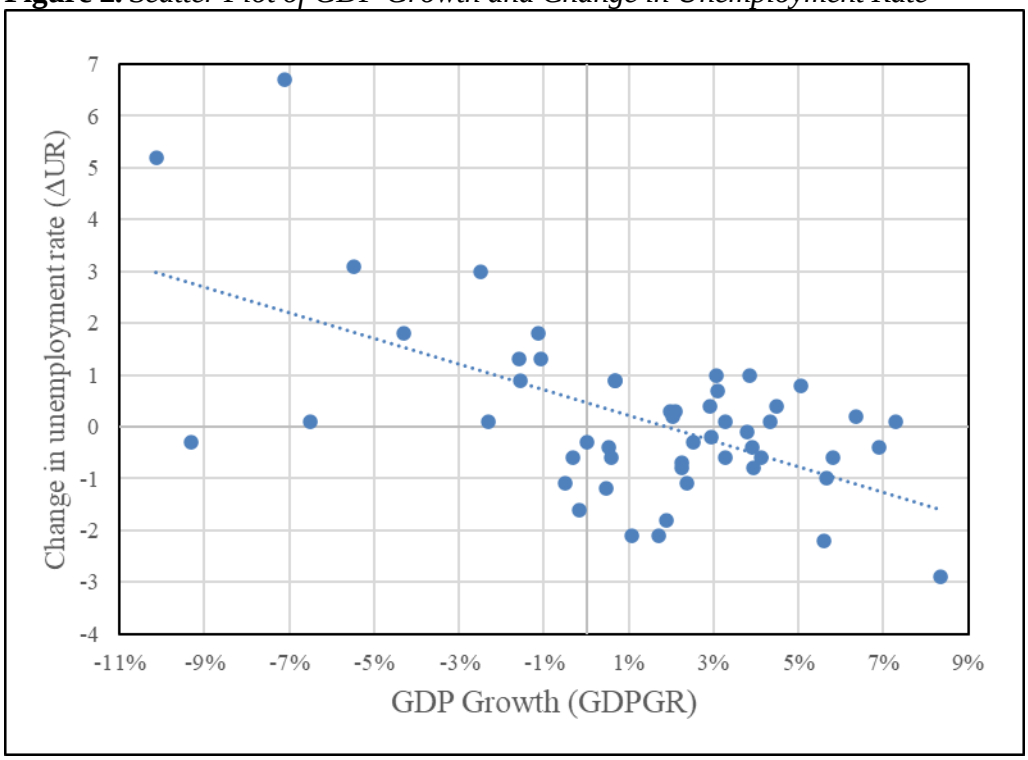


Table 3. *Estimates of Okun's Law Equation, Greece (1974-2025)*

	α	**β**
Coefficient Estimates	0.4697	-0.2465
t Stat	2.3606	-5.1532
P-value	0.0222	0.0000
Lower 95%	0.0700	-0.3426
Upper 95%	0.8694	-0.1504
R Square	0.3469	
Adjusted R Square	0.3338	
Standard Error of the regression	1.3643	
F (probability)	26.55 (0.00001)	
Observations	52	

The value of β is estimated to be equal to -0.2465. When compared with the estimations of β for advanced countries reported in Table 2, it falls at the lower bound, indicating a relatively small effect of output growth on the Greek unemployment rate. An increase in output growth by 2% will decrease the Greek unemployment rate by 0.69%. Only three countries shown in Table 2 have lower absolute values of β: Austria (-0.136), Japan (-0.152), and Switzerland (-0.234). Values very close to Greece's include Italy (-0.254) and Portugal (-0.268).

It goes beyond the scope of this paper to analyze this relatively low response of output growth on the unemployment rate. One explanation might be that the

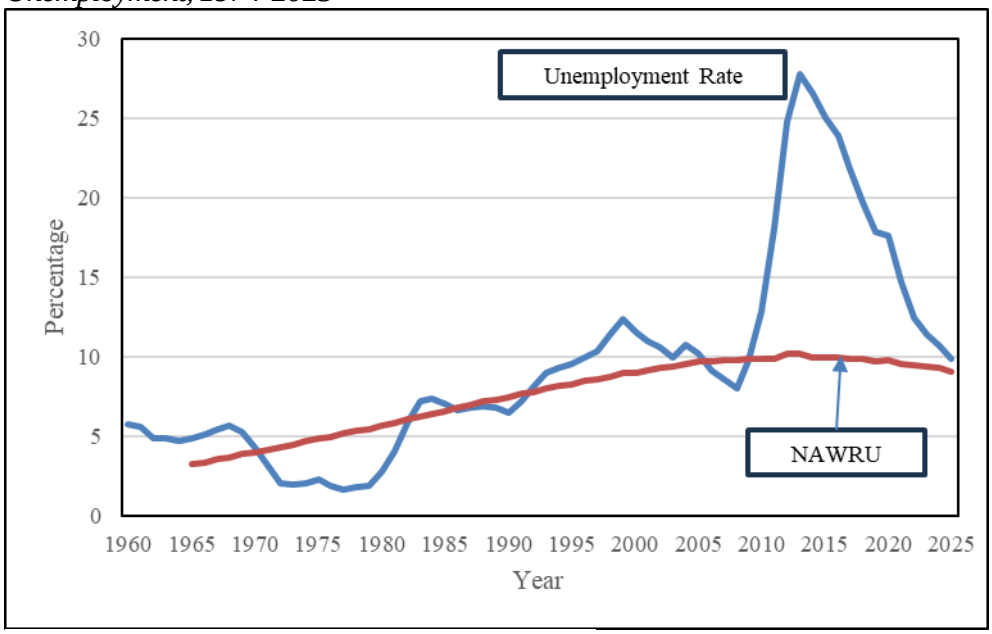
natural rate of unemployment is high in Greece. This issue is examined in the next section of this paper.

Unemployment and Inflation (The Phillip's Curve)

Output growth is the most important indicator of a country's macroeconomic performance. Two other key indicators that reflect the health of the macroeconomy are the unemployment rate and the inflation rate. The relationship between these two is termed the Phillips Curve. This section examines these criteria as well as the shape of the Greek Phillips curve.

Figure 3 plots two Greek unemployment rates: the actual unemployment rate and the Non-Accelerated Wage Rate of Unemployment (NAWRU), both reported by the European Commission. The difference between the two unemployment rates captures what can be termed cyclical unemployment.

Figure 3. *Unemployment Rate and the Non-Accelerated Wage Rate of Unemployment, 1974-2025*

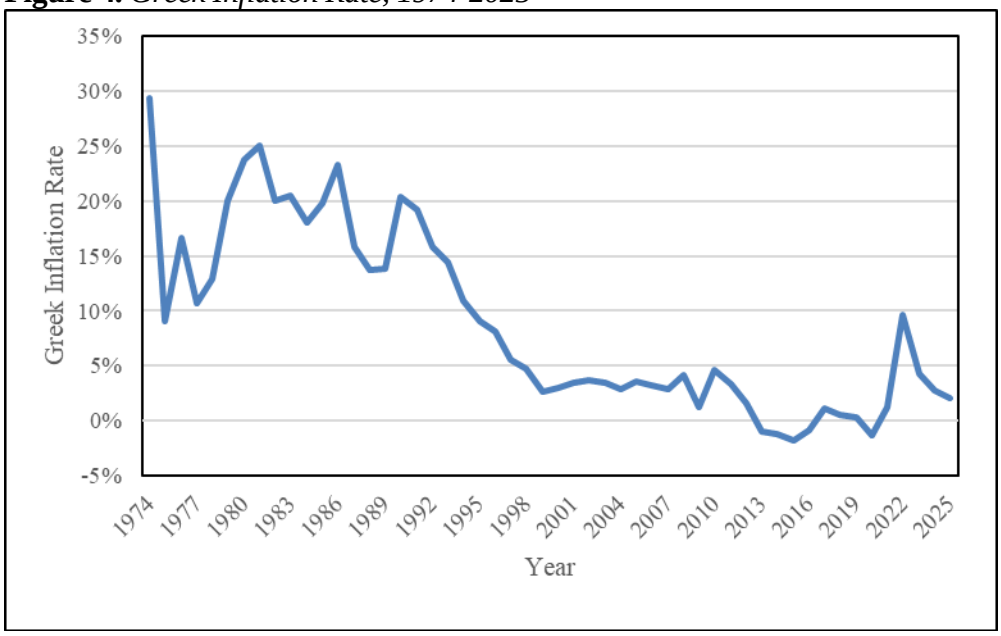


Source: Eurostat (AMECO, retrieved 15 November 2023)

It is evident from the figure, and as expected from the economic literature, that during periods of recession, such as the Great Recession of 2008-2017, the divergence between actual unemployment and the NAWRU is maximized.

Figure 4 plots the Greek inflation rate from 1974 to 2025. The entire long-run period can be divided into two subperiods of high and low inflation rates. From 1974 to early 1998, the inflation rate was high, averaging 16%.

Figure 4. *Greek Inflation Rate, 1974-2025*



Source: Eurostat (AMECO, retrieved 15 November 2023) and authors calculations based on the Consumer Price Index (CPI).

It was around this time that Greece seriously considered the possibility that reducing inflation rates to levels close to other European Union countries, aspiring to join the eurozone, could fulfill the political objective of adopting the euro as the new official national currency. The average Greek inflation rate for the period 1999-2025 was 2.21%.

The relationship between unemployment and the inflation rate is depicted in Figure 5, and the regression results are reported in Table 3. As predicted by the economic literature, the Greek Phillips curve displays a negative, non-linear, and stable relation between the two rates: inflation and unemployment.

As shown in Figure 3, the Greek NAWRU was close to 10% in the last years, a trend also reflected in the Phillips Curve. A zero percent inflation rate can be achieved with a very high official unemployment rate of 20%. During the Great Recession, the Greek unemployment rate skyrocketed, reaching levels over 20% from 2012 to 2018. During these years of hyper-unemployment (2012-2021), the Greek inflation rate averaged -0.13%.

Figure 5. *The Greek Phillips Curve, 1974-2025*

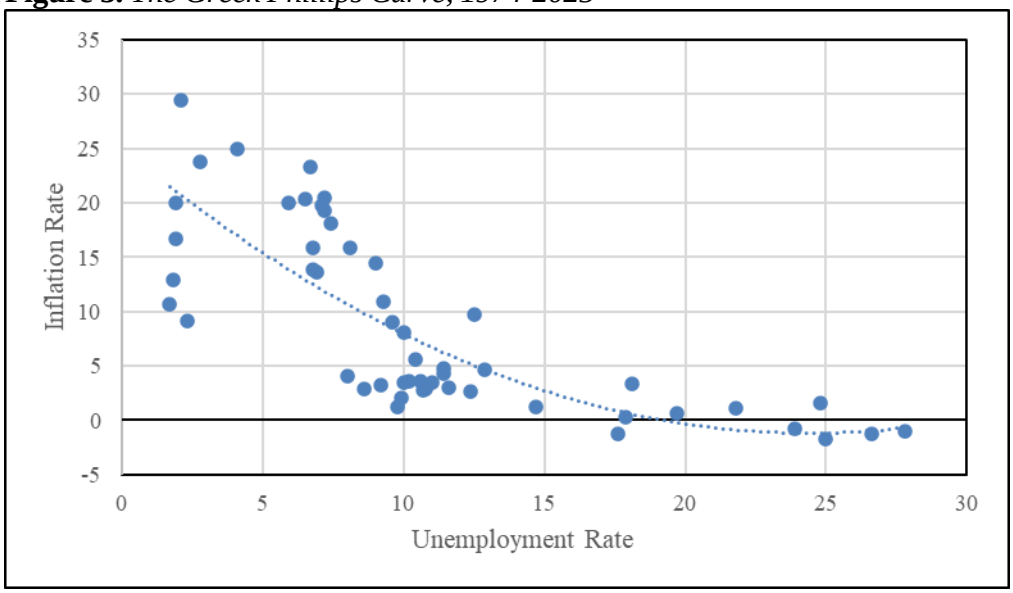


Table 3. *Estimation of the Greek Phillips Curve, 1974-2025*

Variables	Coefficients	t Stat	P-value
Intercept	0.2504	10.23	9.4E-14
UR	-0.0215	-5.25	3.3E-06
UR^2	0.0004	3.12	3.1E-03
	R Square	0.6119	
	Adjusted R Square	0.5961	
	F	38.63	
	Significance F	0.0000	
	Observations	52	

In conclusion, the Greek macroeconomic performance aligns with the postulates of economic literature, both theoretical and empirical. The two relationships that explain Greek macroeconomic fluctuations are Okun's Law and the Phillips Curve. Both curves indicate that the challenges facing the Greek economy are not solely cyclical but also structural.

The observation that an increase in aggregate demand does not result in a substantial reduction in the unemployment rate and the stylized fact that lower inflation rates (e.g., less than 2%) are associated with very high unemployment rates (e.g., more than 10%, and in some years more than 20%) may be explained by the structural weaknesses of the Greek economy.

These weaknesses are discussed in the next section within the context of the question posed in this paper: Is an economic miracle possible, as it was during the period of 1950-1973?

The Future Prospects of the Greek Economic Growth

The previous estimations and analyses of Okun's and Phillips curves reveal that the Greek economy suffers from structural problems, which require further research to identify the exact sources of these deficiencies. In the 1950s and 1960s, Greek economic growth was second only to Japan's. However, in the 1920s, Greek economic growth lagged behind that of many countries in the Eurozone. Table 4 shows the growth rates of the 20 Eurozone countries as an average for the period 2021-2025.

Table 4. *Growth Rates in the Euro Countries (average of 2021-2025)*

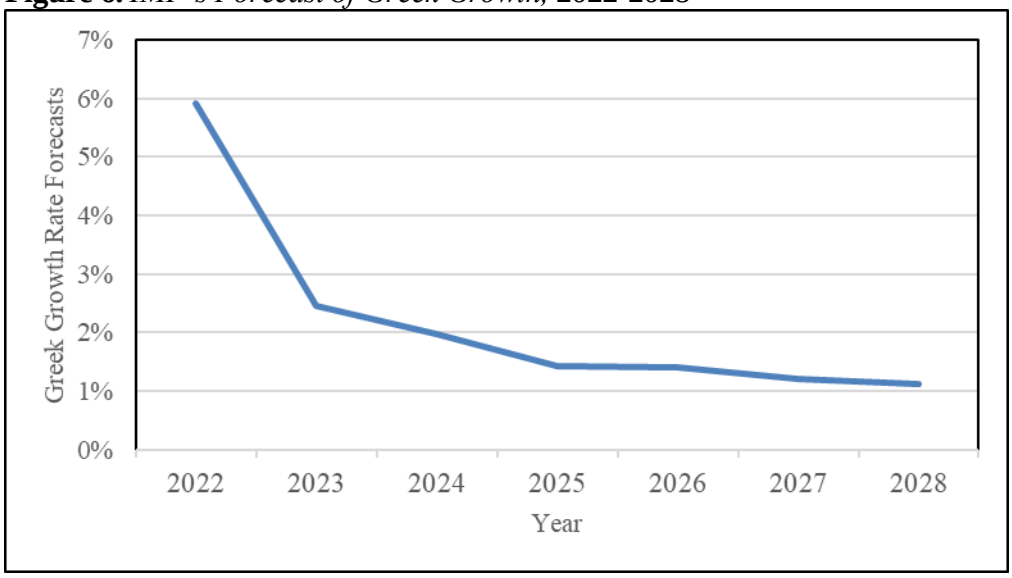
Rank	Countries	Growth rate	Rank	Countries	Growth rate
1	Malta	6.32%	11	Lithuania	2.85%
2	Ireland	6.02%	12	Belgium	2.83%
3	Croatia	5.61%	13	Netherlands	2.79%
4	Cyprus	4.56%	14	France	2.50%
5	Greece	4.16%	15	Slovakia	2.30%
6	Spain	3.65%	16	Luxembourg	2.29%
7	Portugal	3.58%	17	Austria	2.17%
8	Slovenia	3.34%	18	Estonia	1.74%
9	Latvia	3.04%	19	Finland	1.44%
10	Italy	2.96%	20	Germany	1.35%

The data have been ordered from the largest to the lowest growth rate. Greece ranks fifth with the highest growth rate in the Eurozone at 4.16%. However, this is hardly comparable to the rates of the early 1950s, which were at 6.37%.

Therefore, the Greek growth rate lags behind both the rates of other Eurozone countries and its own achievements in the first half of the 1950s. Thus, we conclude that the 2020s will not witness another Greek economic miracle.

This conclusion is reinforced by the International Monetary Fund (IMF) forecasts. Figure 6 illustrates the IMF forecast for the 2023-2028 period. If these IMF forecasts materialize, the Greek economy is expected to grow, on average, by 1.6% for the 2023-2028 period. This falls far from being considered an economic miracle, especially when considering the periods of much higher economic growth rates the Greek economy experienced since the 1940s.

Figure 6. *IMF's Forecast of Greek Growth,* 2022-2028



Conclusions

Is a Greek economic miracle in the making in the 21st century? This paper has shown that this is most probably not going to occur in the 2020s, as it did in the 1950s.

However, the 21st century has a long way to go, and another Greek economic miracle may happen. Economic policies could play a crucial role in facilitating such miracles.

This is another question that was not addressed in this paper and is left for future research. This, of course, will include a detailed analysis of the economic policies followed in the 1950s that created the conditions for the Greek economic miracle.

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Adam Smith's Implicit Theory of Distributive Justice

By Mikko Arevuo[*]

Adam Smith wrote at a time when new commercial forces were reshaping national politics, pulling people from the countryside into growing towns, and altering the physical, social, and ideological landscapes. He broke with the mercantilist position, which assumed that all that mattered was the wealth of the ruling classes and the state. Smith argued that the best indicator of a country's success was the prosperity of the workers, created through a commercial system based on natural liberty of self-ownership, equality, liberty, and justice. Although Smith didn't explicitly develop a theory of distributive justice, he considered the interests of the three main social and economic classes in mid-18th century Britain: workers, owners of capital and landlords. Smith thought of equality as a combination of two ideas that were novel at the time: an account of liberty that was rooted in the nascent discipline of economics and a democratic social ideal of dignity for ordinary people. Grounded in Smith's moral philosophy that places human equality as its core value, this paper unpacks his theory of economic growth and efficiency, where rents and wages increase as society develops economically while profit and interest rates fall, thus resulting in an overall fall in inequality.

Keywords: *Adam Smith, inequality, moral philosophy, Theory of Moral Sentiments, Wealth of Nations*

JEL Classification: *A10, B12, D63, D72, N00*

Introduction

One of the most significant topics in modern political and economic discourse is how capitalist societies should address growing economic and social inequality. Recent prominent contributions considering the ill effects of inequality have focused on stunted economic growth, reduced social mobility, and impaired democratic processes (Stiglitz 2012, Piketty 2020, Wolf 2023). Others have focused on how inequality violates some standard of justice or fairness (Rawls 1971, Tomasi 2012, Chandler 2023). One of the consequences of being a leading Scottish Enlightenment thinker and a founder of the discipline of economics is that politicians, public intellectuals, and economists have attempted to find inspiration from Adam Smith's work to support their own, often ideologically driven, worldview (Arevuo 2023). Smith has had the misfortune of either being claimed as a fervent friend of the poor[1] and the intellectual grandfather of modern-day redistributive programmes (Rothchild 1992, Fleischacker 2004), a radical

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[1]Smith referred to 'the poor' as all those who live mainly by their labour and who lack significant property or social position, not only the destitute.

egalitarian (MacLean 2006), while others suggest that Smith's true legacy lies in the libertarian economics of laissez-faire capitalism (Smith 2013).

Smith saw economic inequality as an inevitable result of a thriving commercial society. He considered a certain degree of it as a motivating factor in encouraging economic productivity: "An augmentation of fortune is the means by which the greater part of men propose and wish to better their condition" (WN II, iii, p. 200). Moreover, Smith considered that the civil government was a helpful by-product of inequality to maintain social and political order: "The acquisition of valuable and extensive property, therefore necessarily requires the establishment of civil government…Civil government supposes a certain subordination" (WN V. ii, p. 298). On the other hand, Smith placed the welfare of the poor at the centre of his political economy: "No society can surely be flourishing and happy, of which the far greater part of the members is poor and miserable. It is but equity, besides, that they who feed, clothe, and lodge the whole body of the people, should have such a share of the produce of their own labour as to be themselves tolerably well fed, clothed, and lodged" (WN I. viii, p. 181). Breaking from the mercantilist position, which assumed that all that mattered was the wealth of the ruling classes and the state, Smith argued that a country's wealth was indistinguishable from the living conditions of its largest class, the workers; the best indicator of a country's success was the prosperity of the workers that was achieved through economic development and growth: "It is not the actual greatness of national wealth, but its continual increase, which occasions a rise in the wages of labour. It is not, accordingly, in the richest countries, but in the most thriving, or in those which are growing rich the fastest, that the wages of labour are the highest" (WN I. viii, p. 172).

Some scholars have pointed out that although Smith can be considered an egalitarian in natural talents and a supporter of equality under the law and civil rights (Fleischacker 2016), he expressed contradictory views on economic equality and distributive justice (Niimura 2016). To better understand Smith's conflicting views, this paper places Smith's perspective on equality in the context of his moral philosophy and the social, political, and economic thought of his era. Smith's views on equality and distributive justice were influenced by other Enlightenment thinkers, including John Locke, David Hume, Jean-Jacques Rousseau[2], and his teacher Frances Hutcheson. Smith's thinking evolved when he considered equality in the context of the stadial theory of civilisation, namely the idea that the degree of inequality was a function of the stages of economic and social development from a primitive state to a pastoral and then to agricultural or feudal, and eventually to a commercial state. Smith looked back to history to construct a theory of the progression of civilisation built upon his understanding of humanity; his stadial theory explored topics including property rights, explained and created maxims on the development of government administration and state revenue systems, and developed an implicit theory of distributive justice that resulted from the society's movement toward a greater political, social, and economic equality.

[2]There has been a surge of interest in the influence of Rousseau on Smith to argue that he was not a naïve advocate of laissez-faire capitalism or possessive individualism. For fuller discussion, see (Sagar 2018, Hont 2015).

This paper is structured in three parts. The first section establishes Smith's moral ideal of human equality based on 'sympathy' and 'impartial observer' as the framework of a moral community of independent and equal people. The second section considers the conundrum of Smith's ideal of human equality with his acceptance of wage inequality between labourers and non-labourers and absolute inequality between social classes. The article concludes by presenting Smith's implicit theory of distributive justice and how a system of political economy could be designed to preclude steep inequalities and increase society's overall welfare.

Equality as a Moral Construct

The danger for any modern scholar is to read Adam Smith in a way that applies our present-day understanding of equality and distributive justice, most commonly associated with John Rawls' (1971) justice as fairness, especially the difference principle that governs the distribution of income and wealth, positions of responsibility and power, and the social bases of self-respect. Rawls posits that inequalities in the distribution of these goods and social structures are permissible only if they benefit the least well-off in society. However, it has been pointed out that social justice theories can be diverse, including equal liberty, equal income, or equal treatment of everyone's rights or needs, but they all have the common characteristic of wanting equality of something (Sen 2009). This paper argues that human equality formed the core of Smith's thought, and he expanded on Hutcheson and Hume's account of moral philosophy by developing the concepts of 'sympathy' (sympathetic imagination that enables us to empathise with the situation and sentiments of others) and of the 'impartial spectator' (an independent observer of our behaviour and that of others) that culminated in a formulation of virtue ethics anchored in prudence, temperance, justice, benevolence, and self-command in commercial society (Arevuo 2023).

Smith developed a framework of equality as a moral community among independent and equal persons. Therefore, judgments involve "an implicit intersubjectivity, a projection into the standpoints of independent individuals that is disciplined by a standard of one among equals" (Darwall 2004, p. 132) so that when we make judgments, each person's perspective is of equal value. Smith also emphasized that impartiality enabled us to see other people's interests and views as of equal value to our own:

> "Before we can make any proper comparison of those opposite interests, we must change our position. We must view them, neither from our own place nor yet from his…but from the place and the eyes of a third person…who judges with impartiality between us…and it requires, in this case too, some degree of reflection, and even of philosophy, to convince us, how little interest we should take in the greatest concerns of our neighbour, how little we should be affected by whatever relates to him, if the sense of propriety and justice did not correct the natural inequality of our sentiments" (TMS, III, iii, p. 158).

Although Adam Smith is widely accepted as a moral egalitarian, he did not think that all people were equal in virtue, although everyone was capable of developing virtuous qualities. Smith saw the differing social status among people primarily as a function of their environments rather than individual, innate characteristics:

> "The difference of natural talents in different men is, in reality, much less than we are aware of; and the very different genius which appears to distinguish men of different professions, when grown up to maturity, is not upon many occasions so much the cause as the effect of the division of labour. The difference between the most dissimilar characters, between a philosopher and a common street porter, for example, seems to arise not so much from nature as from habit, custom, and education. When they came into the world, and for the first or eight years of their existence, they were perhaps very much alike, and neither their parents nor play-fellows could perceive any remarkable difference (WN, I, ii, p. 120).

Thus, Smith viewed human equality as a normative principle from the moral perspective and the point of view of the impartial spectator. However, this emphasis did not preclude that all people were equal in virtue, intelligence, wealth, political and social status, or happiness. Smith was concerned that the development of the division of labour was an alienating force in the rapidly industrialised British economy. Although he advocated the division of labour as the means of gaining greater economic efficiencies and growth, resulting in improved overall welfare, Smith witnessed the adverse consequences of the new industrial production methods on workers' mental and moral state.

> "In the progress of the division of labour…[T]he man whose life is spent in performing a few simple operations, of which the effects are perhaps always the same, or very nearly the same, has no occasion to exert his understanding or to exercise his invention in finding out expedients for removing difficulties which never occur. He naturally loses, therefore the habit of such exertion, and generally becomes as stupid and ignorant as it is possible for a human creature to become (WN V, I, p. 368).

To address worker alienation, Smith promoted widespread state-provided elementary education for all, both for skills development and as a civilizing institution. He argued that public education was critical for developing people's sense of morality and the ability to make ethical judgments. Smith's emphasis on education was probably rooted in Scottish Calvinism that required, unlike in England, that all boys and girls had to be able to read. On the other hand, Smith seemed comfortable with the idea that there can be unequal economic outcomes by endorsing income inequality between industrious and idle workers as a motivating mechanism for prudence, diligence, and economic efficiency and productivity. Additionally, Smith preferred an unequal but 'opulent' society to a primitive society where everyone was equal but poor because even the poorest were materially better off in an 'opulent' society than those at the very top of a primitive society. We will consider these two states of inequality in turn.

Relative Labour Income and Absolute Class Inequality

Smith's views on labour income inequality were based on his theory of stadial development of society from hunting, pasturage, and farming to commerce (LIJ, iii, p. 69). His concepts of property ownership and labour income inequality, or 'work principle,' were based on Locke's doctrine of self-ownership and the labour theory of property. According to Locke, who laid the foundations of empiricism upon which social scientific questions can be formulated (Morell et al. 2015), people developed ownership relations by combining their labour with things in the world. Property resulted from the exertion of individual labour upon natural resources. These resources were transformed into objects and artefacts that became the labourer's property, thus giving the person a right to that property.

As a result of the different degrees of labour applied to natural resources, income inequality was justified: "…different degrees of industry were apt to give men possessions in different proportions" (Locke 1790/1988, p. 301). Locke also saw people as self-owning in the sense they were the owners of their labour. Hume adopted Locke's proposition and justification of inequality and further stated that a forceful equal distribution of wealth and property would cause idleness and general poverty:

> "…however specious these ideas of perfect equality may seem, they are really, at the bottom, impracticable; and were they not so, would be extremely pernicious to human Society. Render the possessions of men ever so equal, their different degrees of art, care, and industry will immediately break that equality. Or if you check these virtues, you reduce society to the extremest indigence; and instead of preventing want and beggary in a few, render it unavoidable to the whole community" (Hume 1751/2011, p. 50).

Even Rousseau accepted that in the early stages of society, property rights and inequality resulted from different degrees of labour and ability:

> "…it is impossible to conceive of the idea of property arising from anything other than manual labour, for one cannot see what besides his own labour a man can add to things he has not actually made in order to appropriate them. It is his labour alone which, in giving the cultivator the right to the product of the land he has tilled, gives him in consequences the right to the land itself, at least until the harvest, which, being repeated from year to year, brings about a continued occupation, easily transformed into property" (Rousseau 1751/1984, p. 118).

The influence of these thinkers is evident in Smith's *The Wealth of Nations*, Book I, Section viii, On the Wages of Labour. Smith confirms the origins of the 'work principle' and property rights in the opening paragraphs: "The produce of labour constitutes the natural recompose or wages of labour. In that original state of things, which proceeds both the appropriation of land and accumulation of stock, the whole produce of labour belongs to the labourer." (WN I, viii, p. 167). He then proceeds to justify proportional labour income by endorsing an economic ideal of an independent worker as an economic motivator:

> "Nothing can be more absurd, however, than to imagine that men in general should work less when they work for themselves, than when they work for other people. A poor, independent workman will generally be more industrious than even a journeyman who works by piece. The one enjoys the whole produce of his own industry; the other shares it with his master…The superiority of the independent workman over those servants who are hired by the month or by the year, and whose wages and maintenance are the same whether they do much or do little, is likely to be still greater" (WN I, viii, p. 187).

However, the invention of money and the process of property acquisition from occupation, accession, prescription, and succession to the voluntary transference of property amplified the degree of societal inequality (LJ I, iii, 69-83). In contrast to the labour income inequality between working and non-working labour that Smith, Hume, and Rousseau accepted, they also recognized the growing inequality in a 'civilized society' between the rich (employers, owners of capital, and landowners) and the poor- (such as labourers). Hume did not endorse complete equality between working and non-working labourers as this would have been against the 'work principle,' but he was critical of the inequality between labourers and non-labourers – different social classes (Niimura 2016). He suggested that equality could be achieved by raising the wages for labour as a kind of income transfer that would result in a more equal distribution of wealth and greater happiness for society. This could be achieved by a commercial and political system that protected free exchange that would lead to a virtuous chain of industry, knowledge, and humanity so that there was an interdependent relationship between material prosperity and moral progress. Rousseau provided a more pessimistic assessment of a 'civilized society' where the exploitation of the poor would lead to either dominion and servitude, or violence or robbery

> "But when estates become so multiplied in number and extent as to cover the whole of land…no estate could be enlarged except at the expense of its neighbour; and the landless supernumeraries, whom weakness or indolence had prevented from acquiring an estate for themselves, became poor without having lost anything, because while everything around them changed they alone remained unchanged, and so they were obliged to receive their subsistence – or to steal it – from the rich; and out of this situation there was born, according to the different characters of the rich and the poor, either dominion and servitude, or violence and robbery" (Rousseau 1751/1884, pp. 119- 120).

Unlike Hume and Rousseau, Smith justified inequality between labourers and non-labourers in a 'civilized society' by comparing their relative position in a 'primitive society.' Although more advanced societies were more unequal than primitive ones, from Smith's perspective, the poor fell beneath the others only in terms of their material living standards, and the poorest in advanced societies were, in absolute terms, better off than those at the top of 'primitive societies.' Although less well-off than the wealthy, Smith didn't think the poor were innately less worthy or deserving of respect than the rich. In Smith's view, it was not wealth that deserved respect and admiration but one's wisdom and virtue that was in everyone's reach through social and economic progress.

Smith was highly critical of the morally corrupting nature of wealth and thought that society did not adequately recognise the positive qualities of the poor and humble who, by their work, "supports the whole frame of society...he bears on his shoulders the whole of mankind" (Martin 2021, p. 843). Hence, the dilemma society faced was how to organize a form of government appropriate to the condition of freedom, equality, and need in which people find themselves (Tomasi 2012). Locke had proposed that the only legitimate function of the government was the protection of natural rights to life, liberty, and property, while Rousseau insisted that such a political system would lead to little more than inequality, dependence, and corruption (Rasmussen 2017, p. 135). Smith's position on the civilizing effects of commerce was less rose-coloured than Hume's. Although Smith called for a system of "natural liberty" where the function of the government should be limited to three spheres: national defence, the provision of a limited set of public goods and the administration of justice, including property rights, he thought that social institutions should be arranged to provide all people the opportunity to better their position. He was convinced that the best way to achieve this was by creating favourable conditions for free markets where productive material, technological, and human resources could be combined to achieve economic efficiency through the division of labour and growth to create national "opulence" for all: "That state is properly opulent in which opulence is easily come at, or in which a littler labour, properly and judiciously employed, is capable of procuring any man a great abundance of all necessaries and conveniences of life…National opulence is the opulence of the whole people" (WN I, viii). Smith's market economy would thrive on the operation of self-interest in a moral environment where people's basic rights were respected and the distribution of opportunities for consumption was provided by growth in economic welfare among social classes.

Implicit Theory of Distributive Justice

Smith's concern for the welfare of the poor included abhorrence of extreme poverty and the morally corrupting nature of wealth. In *The Theory of Moral Sentiments* (TMS) he described how "the poor man…is ashamed of his poverty. He feels that it either places him out of the sight of mankind, or, if they take any notice of him, they have, however, scarce any fellow-feeling with the misery and distress which he suffers (TMS I, III, ii, p. 63). Smith describes the vanity of the wealthy who gain more pleasure from the attention of the less well-off than the pleasure afforded by their material holdings:

> "But vanity is always founded upon the belief of our being the object of attention and approbation. The rich man glories in his riches, because he feels naturally draw upon him the attention of the world, and that mankind are disposed to go along with him in all those agreeable emotions with which the advantages of his situation so readily inspire him" (TMS, I, III, ii, p. 62).

Nevertheless, Smith was intellectually wedded to the structure of the class society, partially because such a structure maintained social order and stability,

and he considered that a certain amount of inequality would be positively helpful to encourage productivity that results from the universal desire for admiration that motives us to strive, driven by the baser characteristics of human nature. To understand Smith's theory of distributive justice, we must place it in the social and, in particular, the economic context of his time.

The population of England in 1759 was made up of six social classes with corresponding annual per-capita income: Workers (56.4%, £14 p.a.); Farmers (18.9%, £22 p.a.); Shop owners (9.4%, £27 p.a.); Capital Owners (4.2%, 145 p.a.); Landed aristocrats (1.5%, £450 p.a.); and Paupers (9.6%, < £3 p.a.) (Milanovic, 2023). England and Scotland were more advanced than other European countries, save Holland, and comparative prosperity extended far down the social scale. The average working-class member consumed over three baskets of subsistence goods annually compared to the workers in the rest of the world, who consumed a little more than one basket. Only paupers in England had incomes that low (Allen 2019). Smith's focus on the absolute wealth of the 'civilized society' compared to the 'primitive society' is understandable in the context of the 'opulence' of Britain at the time. On the other hand, the country was highly unequal. Milanovic (2023) and Allen (2019) acknowledges that some studies on interpersonal inequality measured by the Gini coefficient[3] have produced conflicting results based on the same set of social tables for the same period. However, there seems to be a consensus that the changes in the size and incomes of the social classes indicate that in 1688 and 1759, the Gini coefficient was about 0.54, but it jumped to about 0.6 in 1798 as incomes became concentrated among the landed classes and capital owners. It was not until the middle of the 19th century that the Gini coefficient declined to 0.48, indicating that the benefits of economic growth began trickling down to the working classes[4].

While Smith accepted inequality and its benefits in creating political stability and as a motivating force for economic efficiency and growth, he didn't accept the ethical validity of social hierarchies. Although the rich may be at the top of the social pyramid, Smith didn't think that they may be deserving of their wealth as high income was often the product of collusion (WN I, x, pp. 232-233), monopoly power at home and abroad (WN IV, ii, p. 29; WN IV, vii, pp. 77-83), plunder of colonies (WN IV, vii, pp. 136-145) or use of political influence (WN IV, ii, p. 48-49). Smith's criticism extended beyond merchants and capital owners to the landed gentry. He was critical of old feudal institutions that allowed the consolidation of property, including inheritance laws, primogeniture and entails, which were used to tie up land for generations and increase inequality: "Entails are thought necessary for maintaining this exclusive privilege of the nobility to the great offices and honours of their country; and that order having usurped one unjust advantage over the rest of their fellow-citizens, lest their poverty should render it ridiculous, it is thought reasonable that they should have another" (WN

[3]The Gini coefficient is the most commonly used measure of inequality. It measures inequality on a scale from 0 to 1, where higher values indicate higher inequality.

[4]For comparison purposes, the modern day Gini coefficients: USA 0.39 (2021); South Africa 0.63 (2014); Norway 0.23 (2019) World Bank data https://worldpopulationreview.com/country-rankings/gini-coefficient-by-country.

III, ii, p. 486). Smith denied the moral superiority of the rich as origins of their wealth were morally questionable. Therefore, he saw the wealth gap as a product of unfair social order, or a product of an unfair commercial society.

Smith addressed inequality indirectly, not through what one would today consider a social democratic redistributive policy, but by envisioning an economic and political system that, if fully implemented, would preclude steep inequalities. This was not out of a normative concern with equality, however distasteful Smith found it, but by virtue of institutional frameworks that aimed to maximise national wealth (Boucoyannis 2013). Smith praised Holland as the most advanced economy of his time and as an example for Britain:

> "The province of Holland ... in proportion to the extent of its territory and the number of people, is a richer country than England ... The wages of labour are said to be higher in Holland than in England, and the Dutch, it is well known, trade upon lower profits than any other people in Europe ... the ordinary rate of profit would be very small, so that usual market rate of interest which could be afforded out if it, would be so low as to render it impossible for any but the very wealthiest people to live upon the interest of their money" (WN, I. ix, p. 194).

Smith envisioned a political economy that would provide greater consumption opportunities for all, achieved by competitive markets, economic efficiency that was based on the division of labour and low market entry barriers that would keep profits low and labour wages high. Such an economic system would prevent the emergence of a social class living off interest alone, a form of Smith's unproductive labour. Hence, wages should rise with increased national wealth and do so naturally, not only as a result of the simple factor of supply and demand. The key principles of Smith's legislation and taxation of unproductive wealth, such as unproductive land holdings, formed a system against the concentration of wealth, freeing capital for productive purposes. In a structurally sound and competitive economy, wealth concentration should not occur. Smith thought that profit rates were tied to capital availability: the scarcer the capital, the worse off the economy and the higher the interest rate. When capital is abundant, by contrast, it is cheap, so interest rates are low, and the economy prospers (Boucoyannis 2013). When capital is scarce, lowering wages while increasing the price of goods makes everyone worse off, except manufacturers.

Smith illustrated this relationship by citing the case of France, where interest rates and profits were high, much higher than in Britain. Yet in France, living standards were lower despite the country's richer natural resources. For Smith, high profits denoted economic pathology (Boucoyannis 2013). The rate of profit, he said, was "always highest in the countries which are going fastest to ruin" (WN, I. x, p. 148). This pathology resulted from the incentives for the economic groups living by profit alone. Smith believed the interests of profit-seekers were structurally and "directly opposite to that of the great body of the people because the rate of profit does not, like rent and wages, rise with the prosperity, and fall with the declension of the society- ety. On the contrary, it is naturally low in rich, and high in poor countries" (WN, I. x, p. 148). It is only through government intervention and as a result of lobbying by special interest groups that wage growth

could be suppressed. Wages are only lowered artificially, through state intervention, because of the sophistry of merchants and manufacturers, who are much more adroit in manipulating legislatures to pass laws in their favour. Moreover, employers enjoy a bargaining advantage over workers and can coerce them to accept worse terms, because they need individual workers less than individual workers need employment (Boucoyannis 2013).

For Smith, land should be distributed widely and evenly, inheritance laws should partition fortunes, taxation could be high to incentivise the productive use of capital, and legislation was necessary to thwart rent-seekers and manipulators. Smith envisioned a corrective system that would ensure abundant capital availability with low rates of interest and competitive markets could provide both an economic and moral logic for increasing national wealth, preventing a rise in steep inequalities, and resulting in improved living standards, especially for the working poor.

Conclusion

Adam Smith's implicit theory of distributive justice is a complex and multifaceted concept that stems from his broader ideas on the natural liberty of self-ownership, economic development, and growth. Although Smith did not explicitly develop a theory of distributive justice, his works provide a framework for understanding how a commercial society can lead to prosperity and economic growth for workers, owners of capital, and landlords alike.

Smith's ideas on economic inequality may seem contradictory at first glance, but they can be reconciled through his moral philosophy and the state of the British economy at his time. While Smith recognized the motivating power of economic inequality, he also placed the welfare of the poor at the centre of his political economy, arguing that a flourishing and happy society requires that the "far greater part of its members be well-fed, clothed, and lodged (WN I. viii, p. 181). Smith also recognised the role of civil government in maintaining social and political order, but he saw it as a helpful by-product of inequality and not as an end in itself.

Moreover, Smith's theory of economic growth and efficiency demonstrates how rents and wages increase as society develops economically while profit and interest rates fall in competitive markets, resulting in an overall fall in inequality. This idea is grounded in Smith's moral philosophy that places human equality as its core value, and it provides a way to reconcile his seemingly contradictory views on economic inequality.

Smith's ideas on distributive justice are still relevant today, especially in the context of growing economic and social inequality. His work provides a basis for understanding how a capitalist society can promote economic growth and prosperity while also ensuring that the welfare of the poor is not overlooked. This is an important consideration for policymakers and economists as they seek to address the challenges of inequality in the modern world (Boucoyannis 2013). However, it is important to note that Smith's ideas on distributive justice are not without their

limitations and criticisms. For example, some scholars have argued that Smith's focus on economic growth and efficiency may neglect the impact of social and environmental costs (Chandler 2023). Others have criticized his views on property rights and the role of the state in regulating economic activity (Wolf 2023), and Rawls has questioned Smith's social system based on the concept of the "impartial spectator" as it "makes no assumptions from which the principles of right and justice may be derived" (Rawls 1971, p. 185).

Despite these criticisms, Smith's thoughts on distributive justice remain an important contribution to political and economic philosophy. His work has influenced generations of thinkers and policymakers, and his ideas continue to shape our thinking about the role of the market, the state, and distributive justice in modern society. His ideas on economic inequality, civil government, economic growth, and efficiency demonstrate the complexity of his moral and economic theories, and they provide a basis for policymakers and economists to address the challenges of inequality in the modern world. While his ideas are not without their limitations and criticisms, they remain an important contribution to the field of political and economic philosophy and continue to shape the way we think about distributive justice, economic growth, and the role of the state in modern society.

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The Willingness of Omani Consumers to Buy Domestic versus Imported Products

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The aim of this paper is to research Omani consumer behavior, specifically consumers' willingness to buy domestic products by examining the influence of consumers' ethnocentrism, conspicuous consumption, and susceptibility to interpersonal influence on domestic product purchases. The study has developed a conceptual model based on previous studies related to consumer behavior and combines the above three factors in one investigation. The research can be considered to be one of the first studies to combine these factors in the context of Omani consumer behavior. The research has used several methods to analyze the data. It starts with descriptive analysis (quantitative method). Moreover, reliability analysis is used to measure the validity of the scales. Finally, multiple regression analysis is applied to test the hypothesis. 377 respondents participated in this study by contributing in the questionnaire which was circulated to them online. The paper offers a new direction to the literature on the subject of consumer behavior, which establishes that consumers' conspicuous consumption and their susceptibility to interpersonal influence have a positive influence on purchasing domestic products, in addition to ethnocentrism. Furthermore, the limitations and implications of this research have explored and recommendations for future research are made.

Keywords: *conspicuous consumption, ethnocentrism, interpersonal influence, domestic product, imported product*

Introduction

Consumer buying behavior has been the focus of a great deal of literature over the past few decades. Most research have focused on the different factors that influence customer buying decisions and behaviors toward different products. In this context, most of the literature focused on customers' attitudes toward domestic and imported products (Shimp and Sharma 1987, Wang et al. 2004 Phau et al. 2008, Kiriri 2021). In fact, domestic manufacturers and their products are beneficial to countries and their inhabitants in numerous ways. For example, they provide career opportunities and increase the growth potential and development of the economy (Mrad, Mullen and Mangleburg 2001). Therefore, it is important to recognise how much people understand the importance of buying domestic products and what part they play, in order to expand the domestic economy. One of the major areas to measure, particularly in developing countries, is the customer's willingness to buy domestic products.

Over the years, researchers have studied domestic products and customer buying behaviour. In most cases, researchers have studied the factors that influence

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customers to buy domestic products; however, most of the literature focus on customer ethnocentrism, initially established by Shimp and Sharma (1987) (Mrad, Mullen and Mangleburg 2001). These researchers developed the CETSCALE, which measures customers' ethnocentrism level and the effect on customers' buying behaviour (Bawa 2004). Moreover, Shimp and Sharma first applied it to customers in the US in 1987.

Customers' conspicuous consumption and susceptibility to interpersonal influence are also important factors that have been studied extensively in different literatures, principally in the context of buying luxury and domestic products.

A further point worth exploring in the area of buying domestic products is the country of origin (COO), country of origin effects (COE) (Mrad et al. 2001) and stereotypes, in relation to countries' manufacturers and trusts and furthermore, animosity (Watson and Wright 2000).

A large number of researchers have studied developed countries (Shimp and Sharma 1987, Wang et al. 2004); nevertheless, very few papers have investigated developing countries (Mrad et al. 2001, Saffu and Walker 2006). For example, there have been few studies that have measured customer ethnocentrism in countries in the Middle East (Mrad et al. 2001). As a result of ignoring Arab countries in the Middle East, there is a distinct lack of information for students and the market to improve the state of the local economy and to gain a greater understanding of the market.

Research Aim

This research aims to measure 'customers' preferences towards domestic products versus imported products in the Sultanate of Oman'. The study examines different socio-economic respondents (male, and female) of different ages, educational levels and travel experience.

Research Objectives

Specifically, this study is guided by the following objectives:

To undertake a literature review related to consumer behaviour towards domestic brands and imported products.
To study whether Omani customers' level of ethnocentrism influences their willingness to buy domestic over imported products.
To examine whether Omani customers' level of conspicuous consumption influences their willingness to buy domestic products over imported products.
To investigate whether Omani customers' level of susceptibility to interpersonal influences their willingness to buy domestic products over imported products.

To measure the willingness to buy domestic products and imported products, in relation to various personal factors, such as, age, gender, education level, frequency of travel, and socio-economic factors.

Literature Review

For purposes of providing a contextual background as well as theoretical framework for this study, a brief review of relevant literature is pertinent at this juncture. The review will focus on the three major variables that the paper studies (ethnocentrism, conspicuous consumption and susceptibility to interpersonal influence).

Consumers' Ethnocentrism

Customer bias towards products has been a topic of research for more than three decades and numerous researchers from different countries have investigated it. According to Saffu and Walker (2006), the two biases that are considered in the context of consumer willingness are positive bias, when consumers' buying orientation is to purchase domestic products over imported products and vice versa. Consumers of the former bias are known to be exceedingly ethnocentric. Hamelin, Ellouzi and Canterbury (2011) mentioned that Sumner (1906) defined ethnocentrism as 'the view of things in which one's own group is the center of everything, and all others are scaled and rated with reference to it' (p. 229). One of the earliest studies on ethnocentrism was conducted by Shimp and Sharma (1987), who also agreed that ethnocentrism, is a concept where people tend to accept their own group culture and reject other cultures for the reason that they believe that they are superior (Kiriri 2021). In addition, they designed CETSALE (a customer ethnocentrism scale) to measure consumers' ethnocentrism (Kiriri 2021). This scale was first applied in the US. The validity of this scale has been confirmed by many researchers in the field, who have used it in their studies. The scale uses the Likert-type (1- strongly disagree to 7 strongly agree) (Saffu and Walker 2006, Kiriri 2021). Nevertheless, Douglass and Nijssen (2003) and Altinats and Tokol (2007) reduced the original items in Shimp and Sharma's scale and kept only six items, whilst also making the modified version bilingual (Jiménez-Guerrero et al. 2014). It is generally accepted that developed countries are more ethnocentric than developing countries, due to the fact that they are more likely to purchase their own products (Wang et al. 2004, Mrad et al. 2001, Kiriri 2021). Based on Shimp and Sharma (1987), US consumers are extremely ethnocentric. In contrast, Saffu and Walker (2006) determined that the ethnocentrism of Ghanaians is low. Furthermore, Shimp and Sharma (1987) noted that the concept of ethnocentrism improves our understanding of consumers' buying decisions and corporate businesses evaluation of domestic and imported products.

According to Shimp and Sharma (1987), customer ethnocentrism is a 'unique proclivity for people to view their own group as the center of the universe, to interpret other social units from the perspective of their own group, and to reject persons who are culturally dissimilar while blindly accepting those who are culturally like themselves' (Mrad et al. 2001, p. 2). In addition, ethnocentric customers buy locally-made products as a moral duty, given that they believe that buying foreign products may possibly damage the national economy and cause a loss of jobs (Saffu and Walker 2006, Shimp and Sharma 1987, Kiriri 2021). Prefer

local products due to moral convictions and a belief that their own country produces superior goods. Additionally, ethnocentrism can cause consumers to favor domestic products over foreign ones. They have a tendency to buy domestic products due to their moral and ethical values they believe (Kiriri 2021). Furthermore, they also tend to overstate the quality of domestic products and favor them regardless of the imported alternatives that are available (Saffu and Walker 2006, Kiriri 2021).

To explain, the ethnocentric consumer has a tendency to evaluate a domestic product by bringing in all the positive features of that particular product, while placing his/her negative judgments on foreign-made products. However, based on Jiménez and San Martín (2010), several other factors should be taken into account, such as animosity and stereotypes. They defined animosity as 'remnants of antipathy, or hostility towards a country'. For example, most Arab Israelis have a great deal of animosity towards Britain. Therefore, they are not willing to buy British products (Rose et al. 2009). Additionally, the Arab-Israeli conflict, which has been going on for more than six decades, means that Arab consumers are unwilling to buy Israeli products. For example, the recent conflict in Palestine which started on 7th Oct 2023, has led to a global call to boycott Israeli brands along with all supported brands involved in supporting the Israeli army and its government. The campaign 'Did you kill a Palestinian?' runs across the globe on different social media platforms by pro-Palestinians (AFP and TOI STAFF 2023, AFP 2023).

Furthermore, Hamelin et al. (2011), highlighted the differences between the ethnocentric consumer and the non-ethnocentric consumer, in terms of their evaluation of products. The main criterion that the ethnocentric consumer tends to examine is the country of origin (COO) of the products he/she wishes to purchase. For example, if the product is not domestic, the ethnocentric consumer will refrain from buying it as they believe that purchasing foreign products will damage the local economy (Kiriri 2021). Nevertheless, an ethnocentric consumer would buy a foreign product if the COO is culturally similar to his country (Lantz and Loeb 1996, Watson and Wright 2000). According to Areiza-Padilla and Manzi Puertas, 2021, there is a noteworthy and affirmative correlation between consumer ethnocentrism and patriotism in developing nations with conspicuous consumption.

Conversely, according to Hamelin et al. (2011) the non-ethnocentric or the polycentric consumer does not evaluate the product based on the COO, but based on the quality and the price, in addition to other criteria. For instance, customers from the Gulf countries do not have a definite preference for a particular origin. This means that they have a propensity to buy products based on market variables, such as price, quality and place (Alhemoud and Mohiuddin n.d.). Based on Saffu and Walker (2006) the reasons for customer bias comprise 'patriotism, ethnocentrism, the economic level of the country of origin, animosity towards a country, products and culture similarity to the home country' (p. 184). Moreover, recent studies have ascertained that levels of consumer ethnocentrism are linked to country of origin (COO) and moreover, country of origin effects (COE) (Watson and Wright 2000).

Country of Origin (COO)

The country of origin or country of origin effects is known as the 'made in' concept (Watson and Wright, 2000). Furthermore, Alhemoud and Mohiuddin (n.d.) noted that Dichter (1962) considered this concept as 'the fifth element of marketing mix" (p. 3). More importantly, Cordell (1992) perceived COO as a process that has three different levels: cognitive, affective and behavioural. Similarly, Solomon et al. (2013) explained the theory of "the standard learning hierarchy'. Their explanation can be summarised into three stages: think (belief), feel (affect) and do (behaviour) (p. 295). In the first stage, the customer investigates the characteristics of the country. Second, he/she evaluates these characteristics and decides to appreciate the product, whether or not he/she wishes to buy it. Accordingly, the consumer decides to take the action of buying the product or not buying it. Nevertheless, customers do not only rely on the affective factors of the COO to evaluate a product, particularly if they lack information regarding it; but also rely on its cognitive factors (Lu Wang and Xiong Chen 2004, Mrad et al. 2001).

Solomon et al., (2013) defined cognitive learning theory as 'a result of mental processes… this perspective views people as problem-solvers who actively use information from the world around them to master their environments' (p. 266). Cognitive factors consist of the marketing mix; i.e., price, place, distribution and product, country economy, and technological development (Chao et al. 1995, Verlegh and Steenkamp 1999). In addition, consumers from developing countries tend to buy products that are made in developed countries, particularly if there is a lack of alternatives. For instance, GCC consumers prefer Western jeans and dresses (Alhemoud and Mohiuddin n.d.). Moreover, according to Kaynak et al. (2000), Bangladeshis prefer British, American and German food products.

Generally, existing literature agrees that consumers, especially from developing countries, prefer products that are produced in developed countries, such as Western countries and the US over the products that are produced in developing countries (Saffu and Walker 2006, Watson 2000, John and Brady 2010, Kiriri 2021, Oumlil 2020) as they believe that all developed countries are culturally and politically similar (Saffu and Walker 2006). For instance, Canadian consumers have a positive perception of domestic and American apparel (Forney, Robolt and Friend 1993). Additionally, according to Kinra (2006), Indians perceive foreign products as superior quality, in comparison to domestic products. However, different studies have proved that consumers prefer to purchase goods from the United States and the United Kingdom amongst developed countries (Saffu and Walker 2006) For example, young Mexicans, who make up 50% of the population, find that US apparel brands are more appealing than the clothing brands of the other countries (Lee et al. 2008). Moreover, Oumlil (2020) supports this argument in his study of 89 participants from Morocco, he finds that product categories from more developed nations receive more favorable evaluation than products from less developed nations.

In contrast, people tend to have an inferior perception of products that come from China, Russia and Eastern Europe. To underline this, Watson and Wright

(2000) noted that consumers from New Zealand think that Chinese products are poor quality. Nevertheless, numerous countries are attempting to raise people's awareness concerning the advantages of purchasing domestic products on the personal and local levels by means of various strategies. It is generally accepted that developed countries are exceedingly ethnocentric, in contrast to developing countries based on different, superior factors, such as level of education and awareness, communication and globalisation, travel and technology.

COO Marketing Campaign and Ethnocentrism

A number of advertising and marketing campaigns and programmes have emerged aimed at promoting local products and changing customer purchasing behaviours from purchasing overseas products to domestic products. The local advertising and marketing campaigns and programmes are frequently supported by governments. Despite the fact that they are governmentally supported, some members of the public believe that governments should put more effort into these particular campaigns.

A study by Saffu and Walker (2006) on Ghanaians' attitudes to buying local campaigns stressed that 92.82% of Ghanaian respondents believe that the government does not make enough effort to promote products from Ghana and that they should endeavour to do more about it. However, one of the techniques that these campaigns and programmes use to change customers' purchasing behaviour towards domestic products and services is by way of provoking citizens' patriotism. For instance, US campaigns which are held under the slogan 'crafted with Pride in the U.S.A' were designed to encourage Americans to buy locally-made products. Similarly, 'Origin Oman' provides parallel commitments for both entrepreneurs and consumers. The entrepreneurs benefit from this campaign for the reason that their businesses are being promoted through it, while the latter benefits from the contribution of the entrepreneurs in public projects, such as youth groups and schools (originoman.om 2009).

Recently, 'Origin Oman' participated in an Expo in Ethiopia, on behalf of more than 100 Omani firms, government bodies and small and medium-size enterprises, introducing Omani products to Ethiopian businesses (tradearabia.com 2016). Despite the advantages of these campaigns, Hamelin et al. (2011) have commented that the negative side of customers' patriotism in purchasing products is that consumers tend to prefer domestic products despite the quality and the function of various imported products. The bias which is related to COO, affects consumption behaviour, brand loyalty, product evaluation decision…etc. (p. 230). Nevertheless, there are several factors that affect customers' choices. Some of them are addressed below.

The Effects of Socio-Demographic Factors on Ethnocentrism

Hamelin et al. (2011) studied the relationship between several socio-demographic factors, for instance, gender, age, occupation, education, and income of 400 respondents in relation to consumer ethnocentrism. They noted that with respect to the research, they did not attain an absolute result regarding the relationship between

the gender factor and consumer ethnocentrism. Nevertheless, Bawa (2004) established that men are less ethnocentric than women, maintaining that they are not guided by their emotions in their purchasing. Additionally, young buyers tend to be less ethnocentric than older people, due to the worldwide increase in cosmopolitanism, which has pushed the youth to be polycentric, even in their purchasing. In fact, numerous prior studies have indicated that in particular circumstances, societies with ethnocentric tendencies can develop positive attitudes toward foreign brands, For example, a recent study titled ' Conspicuous Consumption in Emerging Markets: The Case of Starbucks in Colombia as a Global and Sustainable Brand' confirmed the above finding they stated that "people in emerging markets, although they may be ethnocentric, when the purchase of foreign products generates social status, and, in addition, these products are part of the symbols of national identity, negative feelings toward them are not generated" (Areiza-Padilla and Manzi Puertas 2021).

According to Wei (2008), farmers in China are more ethnocentric, as a result of the limited access to information concerning foreign products. Moreover, Hamelin et al. (2011) noted that several studies did not establish a correlation between education and ethnocentrism. However, based on Bawa (2004), a number of researchers have agreed that the lower the education, the higher the consumer ethnocentrism. Furthermore, Hamelin, Ellouzi and Canterbury (2011) noted that people with low incomes are liable to be more ethnocentric because they have fewer chances to travel and buy foreign products, in contrast to people with a higher income. Additionally, Saffu and Walker (2006) ascertained that travelling, communication and education develop consumer's perceptions of the countries they visit. They also improve their demand for quality products, which are provided in these countries. All these socio-demographic factors affect conspicuous consumption.

Conspicuous Consumption

The concept of "conspicuous consumption" was first introduced in 1899 in 'The Theory of the Leisure' by the American socialist and economist Thorstein Veblen. He introduced this concept to describe the wealthy conditions that the upper class lived in during the 19th century, as a result of the Second Industrial Revolution. The concept depicts consumers who purchase luxury and expensive products to exhibit income, status, and wealth instead of covering their real needs from the products. In other words, ostentatious consumers actually behave in this way to gain respect and high status (Veblen 1899, Areiza-Padilla and Manzi Puertas 2021). Additionally, social referencing, prestigious values, and construction of one's self are features of a product, in order to be considered as luxurious (Wiedmann et al. 2007, Areiza-Padilla and Manzi Puertas 2021).

During the appearance of this concept, it concerned only people who were high class as they could fulfill the condition of owning property, in order to be included in the conspicuous consumption concept (Trigg 2001, Areiza-Padilla and Manzi Puertas 2021).

Sundie et al. (2011) defined conspicuous consumption as 'attending and exhibiting costly items to impress upon others that one possesses wealth and state' (p. 1). Nevertheless, the tendency to rise socially exists in all classes and it is expressed by buying luxurious products (Shukla 2010). Moreover, Shukla (2010) has called "people who continuously strive to surround themselves with visible evidence of the superior rank they are claiming" status seekers (p. 1). These consumers might be inferior and attempt to fill this gap by demonstrating their wealth (Areiza-Padilla and Manzi Puertas 2021). In fact, consumers who like to show off affect other people of higher and lower classes, as they imitate them. By the 20th century, both rich and poor attempted to impress others and gain the advantages of conspicuous consumption; therefore, luxury markets increased (Truong et al. 2008, Trigg 2001). As a result, the effects of luxury markets on other markets and consumers have become a subject of study in pieces of literature (Wiedmann et al. 2007).

The Effect of Luxury Products on Conspicuous Consumption

According to Truong et al. (2008), people perceive new luxury brands differently in the context of conspicuousness and status. Nueno and Quelch (1989) cited in Park, Rabolt and Sook Jeon (2008) defined luxury brands as 'those whose ratio and functional utility to price is low while the ratio of intangible and situational utility to price is high' (p. 245). Chalhoub (2014) indicated that 42% of GCC luxury consumers spend approximately $2,400 on beauty, fashion and gifts. In addition, they purchase luxury clothes once to twice per month, and luxury shoes and bags twice to three times per month. However, conspicuous consumption reflects the intangible side of a brand and carries its image. Based on O'Cass and McEwen (2004), Kilsheimer (1993) defined status consumption as 'the motivational process by which individuals strive to improve their social standing through conspicuous consumption of consumer products that confer and symbolize status both for individuals and surrounding significant others' (p. 26). To emphasize this, Chalhoub (2014) stated that 82% of GCC consumers buy luxury gifts with the aim of enhancing their image and impressing other people. In fact, they are buying foreign brands to emphasis that statues (Areiza-Padilla and Manzi Puertas 2021).

According to Shukla (2010) who has studied status consumption in the UK and India, the consumer's tendency to achieve social gain influences status consumption. However, consumers are inclined to believe that it is imprecise to consider conspicuous consumption and status consumption as one term. The two terms: conspicuous consumption and status consumption are, in fact, correlative terms and are very similar. (Truong et al. 2008, Areiza-Padilla and Manzi Puertas 2021) stressed that some individuals purchase brands to gain internal status i.e., improving self-respect and self-esteem, and external status i.e., others' approval and envy. Furthermore, some customers tend to purchase luxury brands to gain status primarily for external motives, for example how others perceive them. Based on Shuka (2010), self-esteem influences status consumption. Moreover, Truong et al., (2008) noted that it is a matter of image and appearance when people buy and use brands for conspicuous reasons. Status seekers purchase products which are

visible to others, in order to associate themselves with status. More importantly, Wang et al. (2004) linked conspicuous consumption to the preference for imported products, as they are perceived as being more prestigious. Conspicuousness is basically a rejection of domestic alternatives and acceptance of specific international products (John and Brady 2010). Areiza-Padilla and Manzi Puertas (2021) stress that consumers who engage in conspicuous consumption typically hold a highly favorable perception of the brands they purchase. They associate these brands with social status, leading to strong brand loyalty.

Wiedmann et al. (2007) argued that several brands gain status from the reputation that people create for that particular brand, regardless of its features and function. In addition, if a product is socially approved as a high-status product, the consumers are more likely to purchase it, in order to meet the social standard. Luxury products which are used in public are more likely to be conspicuous in contrast to luxury products which are used privately. To emphasise this point, people tend to make sure that they use luxury products during the week to claim high social and professional status, while they use other products during weekends to meet the social standards of their families and neighborhoods (Wiedmann et al. 2007).

The Effects of Socio-Demographic Factors on Conspicuous Consumption

There are several socio-demographic factors that contribute to the concept of conspicuous consumption, for instance, age, income, materialism and gender. In addition, several researchers, such as Wang et al. (2004) and Alhemoud and Mohiuddin (n.d.) have related buying foreign products to conspicuous consumption, excluding products imported from China, Russia and Eastern Europe. A number of studies have proved that the younger generation tends to buy imported or luxury products. For example, Australian adolescents tend to have more positive attitudes towards overseas luxury brands over locally made brands (Phau et al. 2008). Nevertheless, Park et al. (2008) ascertained in their study of Korean consumers, that there is no relation between age and the purchase intention towards luxury brands. The same paper revealed that the higher the income, the higher the purchasing intentions with regards to international luxury products. Due to the fact that the world is more materialistic than ever, the intention to buy luxury products is higher than ever these days. Furthermore, the previous study has also emphasised that materialism promotes luxury products. Thus, conspicuous consumption is high. However, females are considered to be more conspicuous because they use clothing more than males to define themselves to the social community (O'Cass and McEwen 2004). In the same vein, a study by Alhemoud and Mohiuddin (n.d.) in GCC countries established that young women have a greater preference to buy Western clothes, with the intention of wearing these clothes to influence their peers and to make their peers discuss what they are wearing, in addition to improving their social status. Interestingly, Sundie et al. (2011) suggested that both women and men perceive the conspicuous consumption of the other gender as interesting for a short-term mate. However, conspicuous consumption may trigger interpersonal influence.

Susceptibility to Interpersonal Influence

Bearden et al. (1989) defined consumer susceptibility to interpersonal influence as 'the need to identify with or enhance one's image in the opinion of significant others through the acquisition and use of products and brands' (p. 473). Solomon et al. (2013) suggested in the theory of 'consumption and self-concept' that products, such as cars, clothing, furniture…etc., help an individual to construct an image of his/her perceived self in his/her mind, given that these products are part of his/her appearance. They asserted that an individual's consumption behaviour assists people to judge the person's social identity. In other words, an individual's consumption behaviour could be used as one way of answering the question: 'who am I now' (p. 158). According to Chalhoub (2014), 34% of Gulf nationals prefer to buy iconic luxury brands as they believe that these brands show who they are and where they stand in society.

John and Brady (2010) highlighted that 'susceptibility to interpersonal influence will have a positive impact on conspicuous consumption of foreign products' (p. 50). A further significant definition of susceptibility to interpersonal influence is 'the willingness to conform to the expectation of others regarding purchase decisions' (John and Brady 2010, p. 473). In addition, Kropp et al. (2005) determined that people who have a high level of susceptibility to interpersonal influence tend to value warm relationships with others, develop a sense of belonging, and are more respected than people with a low level of susceptibility to interpersonal influence (p. 4). Nevertheless, the literature has established that there is a negative correlation between susceptibility to social influence and age; hence, the older an individual becomes, the less susceptible he/she is to social influence (Kropp et al. 2005).

In conclusion, this review not only explored some studies which had been had been done in the past, but also clearly shows the new perspective that this study introduces, especially by focusing on Oman as a typical GCC country.

Study Hypotheses and Methodology

In order to give a clear direction and scope to this study, the following hypotheses shall determine the method of collection, analysis and discussion of empirical data in the subsequent sections of this paper.

Influence of Ethnocentrism on Omani Consumers' Willingness to Buy Domestic versus Imported Products

Customer's ethnocentrism is defined by Shimp and Sharma (1987) as a 'unique proclivity for people to view their own group as the centre of universe, to interpret other social units from the perspective of their own group, and to reject persons who are culturally dissimilar while blindly accepting those who are culturally like themselves' (Mrad et al. 2001, p. 2). The literatures established that highly ethnocentric consumers have a positive attitude towards local products.

They believe that buying domestic products is a national duty and it is a part of their morality (Wang et al. 2004, Phau et al. 2008).

Level of ethnocentrism was measured by Shimp and Sharma (1987) in the United States using CETSALE. They determined that US consumers are exceedingly ethnocentric. Moreover, much literature underlines that consumers from developing countries tend to be less ethnocentric than consumers from developed countries (Saffu and Walker 2006, Watson 2000, John and Brady 2010). Consumers from developing countries have a propensity to purchase products that are made in developed countries seeing as they think that these countries are superior technologically and economically, or sometimes because of the lack of choices in their motherlands (Chao et al. 1995, Verlegh and Steenkamp 1999).

For example, young Mexican consumers are likely to prefer US clothes (Lee et al. 2008). Moreover, another research has discovered a minimal level of ethnocentrism among Kenyans, a finding that aligns with similar studies conducted in various regions across Africa, such as Nigeria, Ghana, Tanzania, and different locations in Africa (Kiriri 2021). A study by (Alhemoud and Mohiuddin n.d.) measured the ethnocentrism of consumers from the Gulf and discovered that they have a low level of ethnocentrism. Therefore, it can be hypothesised that:

> H1: Omani consumers' ethnocentrism positively influences their willingness to buy domestic products.

Influence of Conspicuous Consumption on Omani Consumers' Willingness to Buy Domestic versus Imported Products

The concept of conspicuous consumption was created by Veblen (1899) to identify wealthy, upper-class people who lived during the second industrial revolution (Trigg 2001). The concept was developed to describe the behaviour of consumers who are 'attending and exhibiting costly items to impress upon others that one possesses wealth and state' (Sundie et al. 2011, p. 1). Nowadays, most social classes practice this behaviour by purchasing luxury brands to gain some social value from this behaviour, such as supervisor status, respect, prestigious values and social acceptance (Wiedmann et al. 2007, Shukla 2010, Sundie et al. 2011). For example, a study by Chalhoub (2014) revealed that GCC consumers spend in the region of $ 2,400 on buying cosmetics, fashionable clothes and gifts. Moreover, a number of other countries have a preference for imported products. For example, Phau et al. (2008) discovered that young Australians have negative preferences towards domestic brands.

It is also argued that Arabs of less economically advantaged classes attempt to imitate those in more prosperous categories. 31% and 43% of GCC consumers strongly agree and agree that they occasionally purchase an item that they had not planned to buy. It is also worth mentioning that the preferences of showing brands to the public in different GCC countries are generally high: 90% in Riyadh, 80% in Abu Dhabi and Doha, 75% in Jeddah and Dubai, and 70% in Kuwait. Moreover, 38% of GCC consumers stated that it is important for them to be noticed. In addition, 40% and 43% strongly agree and agree that it is important for

them to be accepted (Chalhoub 2014). In fact, consumers from developing countries have a tendency to think highly of most imported luxury brands unlike local luxury brands (Wang et al. 2004). Thus, it can be assumed that:

> H2: Omani consumers' conspicuous consumption negatively influences their willingness to buy domestic products

Influence of Susceptibility to Interpersonal Influence on Omani Consumers' Willingness to Buy Domestic versus Imported Products

John and Brady (2010) defined susceptibility to interpersonal influence as 'the willingness to conform to the expectation of others regarding purchase decisions' (p. 473). Moreover, it is the behaviour of attempting to improve an individual's image in the minds of others by using brands that would provide acceptance (Kropp et al. 2005). For example, Chalhoub (2014) determined that 40% and 43% of GCC consumers strongly agree and agree that it is important for them to be accepted. In addition, 39% of them agree and strongly agree that they keep up with the latest fashion. In fact, 32% of them actually grew up with buying luxury brands.

The studies have shown that people who have a high level of susceptibility to interpersonal influence are most likely to have warm relationships with others (Kropp et al. 2005). These relationships are predominantly with friends, a spouse, siblings and parents. Chalhoub (2014) studied consumers' behaviours in the GCG towards buying luxury brands and established that 79%, 66%, 52%, 44% and 22% of them respectively agree that their friends, a spouse, siblings, mothers and fathers are their principal influence on buying luxury brands. Moreover, John and Brady (2010) noticed that there is a significant relationship between susceptibility to interpersonal influence and conspicuous consumption. Therefore, it can be hypothesized that:

> H3: Omani consumers' susceptibility to interpersonal influence negatively influences their willingness to buy domestic products.

Research Methodology

The design of this research is descriptive and quantitative using a survey method. It is descriptive as it uses different measurements; however, the most important measurement is, as Curwin and Slater (2008) stated, standard deviation which is commonly used with the mean (p. 140). Moreover, descriptive research aims to provide a description of what is observational in a range of variables and may present them in percentages, while the aim of a quantitative study is to discover causal relationships (Aect.org 2011). Aimed at measuring the three main variables: ethnocentrism, conspicuous consumption and susceptibility to interpersonal influence, which were presented in the research framework and hypotheses, this study used an online survey questionnaire, which was transmitted via Google docs as the main instrument of data collection. Its questions are based on three different certified scales with some adjustments in order to suit the

cultural context of the respondents.

The questionnaire consisted of two sections. The first section sought responses to respondents' socio-demographic data, which were relevant in testing the study hypotheses, namely: age, gender, level of education, and frequency of travel. The second section comprised a variety of questions that aimed at the following: measuring the level of ethnocentrism of respondents; identifying respondents' ability to identify the origin of six of the most worn outfits in Omani society; measuring the conspicuous consumption tendencies of the participants; determining the level of susceptibility to interpersonal influence of the Omani participants.

Construct Operationalisation and Measures

According to table 1 below, this research used three scales for each variable. The first scale is a modified one from Shimp and Sharma's (1987) (CETSALE) to measure the level of ethnocentrism pertaining to Omani participants. The second scale investigates the level of participants' tendency to conspicuous consumption (Bearden et al. 1989). The last scale aims to measure susceptibility to interpersonal influence (O'Cass and McEwen 2004).

Table 1. *The Three Scales Used in the Study*

Construct	**Items**	**Sources**
Ethnocentrism	Measures the Level of Ethnocentrism	Shimp and Sharma (1987)
Conspicuous Consumption	Measures Conspicuous Consumption Tendencies	Bearden et al. (1989)
Susceptibility to Interpersonal Influence	Measures Susceptibility to Interpersonal Influence	O'Cass and McEwen (2004)

Source: As listed above.

Study Sample

The study sample comprised 377 Omani adults who were requested to respond to the survey questionnaire that was posted on online platforms such as Facebook, WhatsApp, LinkedIn, Instagram and Twitter for a period of ten days. The Arab Social Media Influencers Summit (2015) reported that the percentages of Omani users of Facebook, WhatsApp, Instagram and Twitter are 86%, 80%, 40% and 36% respectively. In addition to having access to at least one of these platforms, many Omanis also use them almost on a daily basis.

Results

Demographic Profile of Respondents

There are four demographic variables in the questionnaire: gender, age, level of education and frequency of travel. The survey was completed by 377 Omanis; 134 males (35%) and 243 females (64.5%). The minority of the participants are aged less than 20 (7.2%) and 41-50 (5%) years old, while the majority is 21-30 years old (45.6%) and 31-40 (33.2%) years old. In addition, the percentages of the participants who are studying in colleges and high schools are very close: 17.2% and 17.8%. However, more than half of the participants are holders of a Bachelor Degree (51.2%) and only 0.3% are illiterate. Moreover, 43% of the participants travel frequently, while 9.3% have never travelled. The full details can be seen in Table 2.

Descriptive Analysis

The questionnaire used three scales to assess the study constructs by using different outfit items familiar to respondents (dishdasha/Abaya, kumaa/shelah, dresses, t-shirt, bags and shoes). This section represents the descriptive statistic for each scale and outfit items, in addition to the correlation. Table 2 presents the scores for the variables.

Table 2. *Descriptive Statistic for Each Scale and Outfit Items*

Variable	Mean	Standard Deviation
Gender	1.64	.48
Age	2.36	.69
Education	5.50	1.07
Frequency of Travel	3.27	1.13

It is evident from the above scores in connection with the respondents' demographic factors that mean scores from 1-5 are diverse; however, the highest mean score was related to educational level which is above 5, while the gender score was the lowest (1.64).

The respondents' ethnocentrism, gives a mean score of 3.54 (SD= 1.12) for the first factor of the ethnocentrism scale: Omani people should always buy Omani made products instead of imported products (Ethno1). The mean scores of 3.57, 3.24, 3.36, 3.59 and 3.08 represent Ethno 2, Ethno 3, Ethno 4 and Ethno 5 respectively (Table 3). The average mean of the ethnocentrism scale in each factor is 3 to 3.6, which means that most of the respondents' answers were similar; it drives us to conclude that most of the respondents have a natural opinion regarding the statements in the scale.

Table 3. *Descriptive Statistics of Respondents' Ethnocentrism*

Ethnocentric Variables	Mean	Std. Deviation
Ethno1	3.54	1.12
Ethno2	3.57	1.31
Ethno3	3.24	1.16
Ethno4	3.36	1.28
Ethno5	3.59	1.11
Ethno6	3.08	1.24

With regards to respondents' outfits; for outfit 1 (dishdasha/Abaya) respondents have a mean score of 2.24 (SD= .72). Scores of 2.17, 1.45, 1.64, 1.34 and 1.51 represent the mean outfits 2, 3, 4, 5 and 6 respectively (Table 4). The mean of the outfit items manufacturer ranges from 1 to 2 which implies that most of the respondents own more imported clothes than domestic clothes.

Table 4. *Descriptive Statistics Related to Respondents' Outfit Manufacturer*

Outfit Variable	Mean	Std. Deviation
Outfit 1	2.24	.72
Outfit 2	2.17	.75
Outfit 3	1.45	.60
Outfit 4	1.64	.65
Outfit 5	1.34	.53
Outfit 6	1.51	.64

For the respondents' conspicuous consumption scale, the mean for gaining respect (CC1) regarding their choice of outfit is 3.62 (SD=1.02). The mean scores of 3.34, 3.41 and 3.80 represent CC2, CC3, CC4 and CC5 respectively (Table 5). The average mean score of the scale is 3.3 to 3.6, which means that most of the respondents have natural opinions concerning the scale statements.

Table 5. *Descriptive Statistics Related to Respondents' Conspicuous Consumption Scale*

	Mean	Std. Deviation
CC1	3.62	1.02
CC2	3.34	1.27
CC3	3.41	1.21
CC4	3.80	.98
CC5	3.44	1.12

Table 6. *Descriptive Statistics related to Respondents' Susceptibility to Interpersonal Scale*

	Mean	Std. Deviation
SII1	.064	1.25
SII2	.066	1.28
SII3	.066	1.28
SII4	.065	1.26
SII5	.055	1.06
SII6	.061	1.19

SII7	.070	1.35
SII8	.069	1.33
SII9	.061	1.18
SII10	.043	.83
SII11	.044	.86
SII12	.046	.89

Pertaining to respondents' susceptibility to the interpersonal influence scale, the mean for SII1 is 2.17 (SD=.75). The mean score and the standard deviation of each factor of the scale are shown below (Table 6). The average mean is below 3, which signifies that most of the respondents have negative (disagree) opinions concerning the scale statements.

Construct Validity and Reliability

Cronbach's Alpha was used to measure the validity and reliability of items in each scale. According to Hair Jr et al. (2006), the acceptable validity for the scale items is at least 0.6 and the best Cronbach's Alpha is 0.7 and above. All the reliable measurements are shown below (Table 7) (Appendix 1). The highest Cronbach's Alpha is reported for the level of ethnocentrism scale (.865) and susceptibility to interpersonal influence scale (.821); at the opposite, the lowest was with regards to the conspicuous consumption scale (.682).

Table 7. *Reliability Analysis Using Cronbach's Alpha*

Constructs	**Nr. Of Items**	**Cronbach's Alpha**
Level of ethnocentrism	6	.868
Outfit	6	.795
Conspicuous consumption	5	.682
Susceptibility to interpersonal influence	12	.814

Test of Correlation

To estimate the strength of the variables' relationship, Pearson's R was used in the correlation matrix using SPSS. Pearson's R ranges from -1 to +1. If one variable increases and the other does, the relationship between the two variables is positive. Conversely, if one of the variables increases and the other variable decreases, the relationship amongst the two variables is negative (Podsakoff et al. 2003).

Examining the correlation matrix in this study (Table 8), it is apparent that the correlation includes both relationships in different variables. For example, there is a significant and positive relationship between conspicuous consumption and susceptibility to interpersonal influence, where {r=0.378, p<.01} which demonstrates discrimination validity (Hair et al. 2006) (Appendix 2). Moreover, a significant relationship between the level of ethnocentrism and the dependent variable (outfit) {r=0.078, p<.01}, where the significance level is at .00. In contrast, there is a negative and significant relationship between the level of education and out- fit where {r=-.189, p<.01}.

Table 8. *Construct Correlations*

***. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).**	**8. Out- fit**	**7. Susceptibility to interpersonal influence**	**6. Conspicuous consumption**	**5. Level of Ethnocentrism**	**4. Frequency of travel**	**3. Level of Education**	**2. Age**	**Gender *.1***	**construct**
	.022	-.014	.051	.084	-.121*	.096	.043	1	1
	-.059	-.032	-.065	.090	.228**	.250**	1		2
	-.189**	-.104*	-.104*	-.072	.252**	1			3
	-.107*	-.071	-.116*	-.029	1				4
	.262**	-.028	.078	1					5
	.132*	.378**	1						6
	.003	1							7
	1								8

Hypotheses Testing

H1: Omani consumers' ethnocentrism influences their willingness to buy domestic products positively.

In order to test the above hypothesis, multiple regression analysis is used to measure the relationships between the independent variable 'level of ethnocentrism' and the dependent variable 'outfit'. As a consequence, a significant model emerges ($F_{7,369}= 6.654$, $p<.05$). Adjusted R square = .095 which means 9.5% of their purchase of domestic products is explained by ethnocentrism. Significant variables that emerged from the result are shown in Table 11.

The result indicates that both independent variables (level of ethnocentrism) are strong predictors of the criterion variable (outfit). Hence, the hypothesis is supported. The *p* values confirm that the independent variable is making a statistically significant contribution to the variation in the dependent variable at level $p<.05$.

H2: Omani consumers' conspicuous consumption influences their willingness to buy domestic products negatively.

In this regression, the significant value is .042, the adjusted r^2 value is .095, and the *t-value* is 2.036. The data demonstrate that Omani consumers' conspicuous consumption behavior is positive towards purchasing domestic outfit products. Therefore, the second hypothesis is rejected (Table 9).

H3: Omani consumers' susceptibility to interpersonal influence influences their willingness to buy domestic products negatively.

Based on the *p-value* which is .344 (and so>.05), the hypothesis is rejected (Table 9). This means that Omani consumers' susceptibility to interpersonal influence has a positive attitude toward domestic outfit products.

Both Omani consumers' conspicuous consumption behavior and Omani consumers' susceptibility to interpersonal influence have a positive effect with respect to buying domestic fashion products.

Additional Findings

In order to gain further details in relation to the relationship between the dependent and independent variable, two groups of the dependent variable are created to test the independent variables. The two groups are traditional outfits, which comprise Abaya/ dishdasha and Kumaa/shelah (outfit 1 and outfit 2), and non-traditional outfits which includes, t-shirt, dress, bags and shoes.

In the first group (traditional outfit) the significant value is .015, and the adjusted R square is .028. Based on the *p* value which is >.05, *t*value is -1.969, and the *beta* is -.106, there is a negative relationship between young Omanis and traditional domestic outfits (Table 10 and Appendix 3). Moreover, it reveals that there is a significant positive relationship (p value= .003, t value= 3.016, .156) between traditional outfit and Omani consumers' level of ethnocentrism, which also supports H1. The adjusted R2 is .028, which indicates 28% of Omani consumers are willing to buy traditional domestic outfits.

Table 9. *Multiple Regression Analysis between Outfit and Independent Variables*

Model	**Beta**	**tvalue**	**pvalue**	**Hypotheses**
Constant		7.348	.000	
Gender	.005	.092	.927	
Age	-.028	-.537	.592	
Level of education	-.147	-2.783	.006	
Frequency of travel	-.047	-.900	.369	
Level of ethnocentrism	.242	4.851	.000	Supported
Conspicuous consumption	.109	2.036	.42	Rejected
Susceptibility to interpersonal influence	-.051	-.948	.344	Rejected
Model summary				
F- statistic	6.654			
p value	.000			
R2	.122			
Adjusted R2	.095			

Table 10. *Multiple Regression Analysis between Traditional Outfit and Independent Variables*

Model		**Beta**	**t- value**	**p- value**
Constant			5.869	.000
Gender		.073	1.398	.163
Age		-.106	-1.969	.050
Level of education		-.033	-.605	.545
Frequency of travel		-.002	-.038	.970
Level of ethnocentrism		.156	3.016	.003
Conspicuous consumption		.036	.651	.515
Susceptibility to interpersonal influence		-.032	-.571	.568
Model summary				
F- statistic	2.526			
p- value	.015			
R2	.046			
Adjusted R2	.028			

For the second group of outfits, the significant value is .000, and the adjusted R square is .113. Based on the *p* value which is >.05, *t* value which is-3.538, and the *beta* which is -.185, there is a negative relationship between Omani consumers' level of education and buying non-traditional domestic out-fits (Table 13) and (Appendix 3), which signifies that the higher the educational level is, the less non-traditional domestic outfit products the consumer buys. In addition, a significant positive relationship emerges between consumers' level of ethnocentrism and buying a non-traditional domestic outfit which is a supporting result with

regards to H1. Furthermore, a positive significant relationship between consumers' conspicuous consumption and the dependent variable is again rejected by H2 (Table 11). More regression results for each.

Table 11. *Multiple Regression Analysis between Non-traditional Outfit and Independent Variables*

Model	**Beta**	**t- value**	**p- value**
Constant		6.233	.000
Gender	-.044	-.886	.376
Age	.034	.666	.506
Level of education	-.185	-3.538	.000
Frequency of travel	-.065	-1.259	.209
Level of ethnocentrism	.234	4.740	.000
Conspicuous consumption	.129	2.437	.015
Susceptibility to interpersonal influence	-.050	-.940	.348
Model summary			
F- statistic	7.809		
p- value	.000		
R2	.113		
Adjusted R2	.113		

Finally, the sample size in the study is above 50, which is considered to be a valid sample for quantitative research. According to the analysis, the study is reliable given that Cronbach's Alpha for all the scales is>0.5. The fitness of the study is good according to the correlation analysis. The regression analysis reveals that H1 is supported and both H2 and H3 are rejected.

Table 12. *Summary of Hypotheses and Results*

Hypothesis	**Result**
H1: Omani consumers' ethnocentrism influences their willingness to buy domestic products positively.	Supported
H2: Omani consumers' conspicuous consumption influences their willingness to buy domestic products negatively.	Rejected
H3: Omani consumers' susceptibility to interpersonal influence influences their willingness to buy domestic products negatively.	Rejected

Discussion

According to the literature, we talk about "ethnocentrism" when a person believes that his/her own group is the supervisor of all groups and the reference for others (Hamelin et al. 2011). Moreover, they tend to accept people who are only from their own group, rejecting others (Shimp and Sharma 1987). According to studies, ethnocentric consumers have a tendency to purchase domestic products over imported products due to the fact that they believe that buying imported products would damage their national economy and create unemployment.

According to the results obtained from this study, Omani consumers manifest favourable behaviour towards domestic products, although they do not totally reject international products (Appendix 3). This could possibly be a result of the lack of alternatives. Moreover, other marketing mix factors, such as price and place, play a role in assisting consumers to make their choice.

The CETSALE is used in many different studies and pursued in different countries to measure consumers' level of ethnocentrism and their behaviour towards domestic and imported products. It has been generally accepted that consumers from developed countries are liable to be more ethnocentric and trust their own domestic products more than consumers from developing countries (Chao et al. 1995, Verlegh and Steenkamp 1999). Moreover, they consider their products to be superior in relation to products from other countries (Saffu and Walker 2006). For example, Shimp and Sharma (1987) ascertained that people in the US are highly ethnocentric, whilst Forney et al. (1993) mentioned that Canadian consumers have positive attitudes towards domestic and American clothes. Conversely, in developing countries, studies have discovered that consumers tend to have a positive perception towards products from developing countries over their domestic products. For instance, Lee et al. (2008) established that young Mexicans have a favourable attitude towards American apparel. Moreover, Kinra (2006) noted that Indians demonstrate a favourable attitude towards overseas products, principally products made in the US and in the UK.

However, based on the results collected in this paper, Omani consumers have a different orientation compared to other developing countries which have been studied before. The results reveal that Omani consumers have a high level of ethnocentrism as well as a positive attitude towards domestic apparel. This could be due to the governmental support of domestic businesses and youth programmes started by His Majesty Sultan Qaboos bin Said in his different speeches. For instance, the one in Saih Al- Taibat in 1991 during his tour of different regions in Oman, where he advised the Omani youth to gain employment in the private sector and asked people to support local business projects (BsSQU 2013). Furthermore, he established 'Omanization programmes' in addition to supporting local businesses (Oman video 2013). Moreover, the campaigns which supported domestic products, such as 'Origin Oman', raised awareness on the importance of buying and supporting different domestic products (originoman.om 2009). In addition, there are different facility programmes that encourage Omani citizens to open their own business and create their own brands, by means of governmental funding and consulting, Sannd (2001), Ruwad (2009), and Knowledge Oasis Oman (KOM) (2003).

Although the contribution of the SME to the GDP until 2014 was between 13-14% (Oman Observer 2014), the SME has increased lately in a quite remarkable way, particularly in fashion and restaurant projects, where the total numbers of licences and shops operating in the fashion field numbered 3633 (NCSI 2016) (Appendix 4). In fact, people have become more educated and aware of the need to support their national economy in the current sensitive economic situation caused by the oil crisis which started 2015.

With regard to consumers' conspicuous consumption and susceptibility to interpersonal influence, and its influence on buying domestic and imported products, it is pertinent to recall that the concepts are linked to John and Brady (2010). While conspicuous consumption is used to describe people who seek to exhibit luxury brands in order to expose social status (Trigg 2001, Sundie et al. 2011, Shukla 2010), susceptibility to interpersonal influence is the behaviour of using brands to gain acceptance from others (Kropp et al. 2005).

Wang et al. (2004) and John and Brady (2010) have linked conspicuous consumption with the behaviour of buying foreign luxury products, as it is seen to be more prestigious. According to John and Brady (2010), people who reject purchasing domestic products are considered to be conspicuous. Based on different papers which have studied conspicuous consumption, it is generally accepted that people perceive imported products as luxury brands, excluding some products that come from poor quality manufacturing countries, for instance China. As an example, Australian teenagers tend to have positive attitudes towards overseas luxury brands over domestic ones (Phau et al. 2008). Moreover, a study by Chalhoub (2014) noted that GCC consumers spend an average of $2,400 on purchasing fashionable clothes and gifts, and moreover, that 80% agree that they buy luxury gifts, in order to enhance their image. In addition, 90% in Riyadh and 80% in Abu Dhabi and Doha like to show brands to the public. Furthermore, it was discovered that friends, spouses, siblings and family are the biggest influence on consumers with regards to purchasing luxury brands. Thus, it was determined that GCC consumers are highly conspicuous and have a tendency to be susceptible to interpersonal influence. Moreover, the literatures illustrates that females have a propensity to be more conspicuous in contrast to men (O'Cass and McEwen 2004).

This study has ascertained that Omani consumers' conspicuous consumption and their tendency to be susceptible to interpersonal influence has directed consumers more into buying domestic fashion products as opposed to imported products. They buy domestic products more than imported products. This could be explained from an economic point of view given that Oman's household income has increased by 83.9% in a decade (Sophia 2014). However, the recent economic situation exacerbated by the oil crisis has led to several bonuses being discontinued in a number of jobs and the removal of governmental subsidies in relation to the oil prices. Consequently, it is believed that this could affect consumers' behaviours and their purchasing power. Moreover, the GDP fell to $70.255 in 2015 after it was $81.797 billion in 2014 (The World Bank Group 2016). In addition, economists have warned that there could be a downturn in the coming years (Townsend 2016). Accordingly, people will be more interested in saving money for the future.

Culturally and demographically speaking, Oman is considered a country with high uncertainty avoidance (IGI Global 2016). Therefore, people are unlikely to buy imported luxury brands. In addition, previous literatures have ascertained that females are more conspicuous than men; however, this research sample included more females than males and the results prove that females are in fact less conspicuous.

Social media and the collaborative support of social media influencers' within the domestic market have played an immense role in changing Omani consumers' perceptions towards local brands. Wearing local brands and posting it on Instagram and Snapchat have become a fashion trend and profitable work for influencers, entrepreneurs and small/medium business owners.

Conclusion

This study examined Omani consumers' behaviour towards domestic fashion products and established that Omani consumers are highly ethnocentric, conspicuous and susceptible to interpersonal influence. In addition, sales demonstrate that they are more willing to buy domestic products over imported products.

This finding will possibly help Omani fashion entrepreneurs and small business owners to understand their targets and address their marketing business in a way that enables them to promote their products as local made products, considering that demand for domestic products is high.

With regard to theoretical implications, this study is probably the first instance of research to study only Omani consumers' behaviour towards domestic products, including ethnocentrism, conspicuous consumption and susceptibility to interpersonal influence. Nevertheless, there has been one unpublished paper by Alhemoud and Mohiuddin (2011, p. 2) which studied GCC consumers' ethnocentrism. Chalhoub (2014) studied luxury consumers in the Gulf; however, he mentioned virtually all the capitals and large cities in the Gulf, except for the capital of Oman, Muscat. This would support the finding of this research that conspicuous consumption and susceptibility to interpersonal influence have influenced Omani consumers to buy domestic products rather than luxury imported products. It can be argued that despite the fact that GCC countries are culturally similar; consumer behaviour is different. Surprisingly, this research shows the opposite of previous researches that conspicuous consumption and susceptibility to interpersonal influence have a positive relationship towards domestic fashion products.

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Appendix 1

Reliability
Ethnocentrism

Ethnocentrism

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	377	100.0
	Excluded[a]	0	.0
	Total	377	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.865	.868	6

Inter-Item Correlation Matrix

	ethno1	ethno2	ethno3	ethno4	ethno5	ethno6
ethno1	1.000	.380	.586	.575	.602	.462
ethno2	.380	1.000	.429	.498	.373	.328
ethno3	.586	.429	1.000	.654	.613	.513
ethno4	.575	.498	.654	1.000	.675	.582
ethno5	.602	.373	.613	.675	1.000	.565
ethno6	.462	.328	.513	.582	.565	1.000

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	377	100.0
	Excluded[a]	0	.0
	Total	377	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.787	.795	6

Inter-Item Correlation Matrix

	outfit1	outfit2	outfit3	outfit4	outfit5	outfit6
outfit1	1.000	.661	.267	.340	.231	.177
outfit2	.661	1.000	.328	.294	.255	.268
outfit3	.267	.328	1.000	.555	.550	.447
outfit4	.340	.294	.555	1.000	.502	.377
outfit5	.231	.255	.550	.502	1.000	.640
outfit6	.177	.268	.447	.377	.640	1.000

Conspicuous consumption

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	377	100.0
	Excluded[a]	0	.0
	Total	377	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.682	.682	5

Inter-Item Correlation Matrix

	CC1	CC2	CC3	CC4	CC5
CC1	1.000	.207	.186	.353	.270
CC2	.207	1.000	.514	.101	.271
CC3	.186	.514	1.000	.234	.440
CC4	.353	.101	.234	1.000	.423
CC5	.270	.271	.440	.423	1.000

Susceptibility to Interpersonal

Influence Scale: ALL VARIABLES

Inter-Item Correlation Matrix

	SII1	SII2	SII3	SII4	SII5	SII6	SII7	SII8	SII9	SII10	SII11	SII12
SII1	1.000	.504	.426	.383	.260	.388	.241	.234	.313	.081	.115	.131
SII2	.504	1.000	.579	.465	.369	.388	.351	.339	.330	.121	.060	.154
SII3	.426	.579	1.000	.537	.377	.314	.340	.317	.366	.109	.122	.130
SII4	.383	.465	.537	1.000	.428	.377	.364	.326	.344	.117	.068	.085
SII5	.260	.369	.377	.428	1.000	.397	.227	.312	.349	.226	.182	.153
SII6	.388	.388	.314	.377	.397	1.000	.300	.335	.322	.101	.038	.121
SII7	.241	.351	.340	.364	.227	.300	1.000	.523	.399	.113	.029	.051
SII8	.234	.339	.317	.326	.312	.335	.523	1.000	.392	.150	.024	.059
SII9	.313	.330	.366	.344	.349	.322	.399	.392	1.000	.183	.168	.160
SII10	.081	.121	.109	.117	.226	.101	.113	.150	.183	1.000	.508	.341
SII11	.115	.060	.122	.068	.182	.038	.029	.024	.168	.508	1.000	.502
SII12	.131	.154	.130	.085	.153	.121	.051	.059	.160	.341	.502	1.000

Case Processing Summary

		N	%
Cases	Valid	377	100.0
	Excluded[a]	0	.0
	Total	377	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.821	.814	12

Appendix

Correlations

		gender	age	edu	travel	ETHNO	CC	SII	OUTFIT
gender	Pearson Correlation	1	.043	.096	-.121*	.084	.051	-.014	.022
	Sig. (2-tailed)		.406	.064	.019	.104	.321	.788	.674
	N	377	377	377	377	377	377	377	377
age	Pearson Correlation	.043	1	.250**	.228**	.090	-.065	-.032	-.059
	Sig. (2-tailed)	.406		.000	.000	.080	.209	.541	.256
	N	377	377	377	377	377	377	377	377
edu	Pearson Correlation	.096	.250**	1	.252**	-.072	-.104*	-.104*	-.189**
	Sig. (2-tailed)	.064	.000		.000	.161	.044	.044	.000
	N	377	377	377	377	377	377	377	377
travel	Pearson Correlation	-.121*	.228**	.252**	1	-.029	-.116*	-.071	-.107*
	Sig. (2-tailed)	.019	.000	.000		.575	.024	.171	.038
	N	377	377	377	377	377	377	377	377
ETHNO	Pearson Correlation	.084	.090	-.072	-.029	1	.078	-.028	.262**
	Sig. (2-tailed)	.104	.080	.161	.575		.131	.584	.000
	N	377	377	377	377	377	377	377	377
CC	Pearson Correlation	.051	-.065	-.104*	-.116*	.078	1	.378**	.132*
	Sig. (2-tailed)	.321	.209	.044	.024	.131		.000	.010
	N	377	377	377	377	377	377	377	377
SII	Pearson Correlation	-.014	-.032	-.104*	-.071	-.028	.378**	1	.003
	Sig. (2-tailed)	.788	.541	.044	.171	.584	.000		.949
	N	377	377	377	377	377	377	377	377
OUTFIT	Pearson Correlation	.022	-.059	-.189**	-.107*	.262**	.132*	.003	1
	Sig. (2-tailed)	.674	.256	.000	.038	.000	.010	.949	
	N	377	377	377	377	377	377	377	377

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix 3: *Multiple Regression Analysis*

Outfit 1: Dishdash \Abaya

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SII, gender, age, ETHNO, travel, edu, CC[b]	.	Enter

a. Dependent Variable: outfit1

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.210[a]	.044	.026	.706

a. Predictors: (Constant), SII, gender, age, ETHNO, travel, edu, CC

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.455	7	1.208	2.421	.020[b]
	Residual	184.060	369	.499		
	Total	192.515	376			

a. Dependent Variable: outfit1

b. Predictors: (Constant), SII, gender, age, ETHNO, travel, edu, CC

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.743	.368		4.739	.000
	gender	.115	.078	.077	1.480	.140
	age	-.103	.056	-.100	-1.853	.065
	edu	.015	.036	.023	.420	.675
	travel	-.009	.034	-.014	-.267	.790
	ETHNO	.019	.007	.152	2.936	.004
	CC	.012	.011	.061	1.089	.277
	SII	-.003	.005	-.029	-.516	.606

a. Dependent Variable: outfit1

Outfit 2: Kumma\ Shelah

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SII, gender, age, ETHNO, travel, edu, CC[b]	.	Enter

a. Dependent Variable: outfit2

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.197[a]	.039	.021	.740

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.176	7	1.168	2.130	.040[b]
	Residual	202.296	369	.548		
	Total	210.472	376			

a. Dependent Variable: outfit2

b. Predictors: (Constant), SII, gender, age, ETHNO, travel, edu, CC

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.277	.386		5.905	.000
	gender	.087	.081	.056	1.071	.285
	age	-.101	.059	-.093	-1.731	.084
	edu	-.056	.038	-.081	-1.476	.141
	travel	.007	.036	.010	.187	.852
	ETHNO	.018	.007	.133	2.557	.011
	CC	.001	.011	.007	.118	.906
	SII	-.003	.005	-.029	-.522	.602

a. Dependent Variable: outfit2

Outfit 3: t- shirt

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SII, gender, age, ETHNO, travel, edu, CC[b]	.	Enter

a. Dependent Variable: outfit3

60

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.322[a]	.104	.087	.574

a. Predictors: (Constant), SII, gender, age, ETHNO, travel, edu, CC

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.038	7	2.005	6.095	.000[b]
	Residual	121.400	369	.329		
	Total	135.438	376			

a. Dependent Variable: outfit3

b. Predictors: (Constant), SII, gender, age, ETHNO, travel, edu, CC

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.048	.299		3.508	.001
	gender	.032	.063	.026	.514	.607
	age	.043	.045	.049	.948	.344
	edu	-.080	.030	-.143	-2.698	.007
	travel	-.022	.028	-.042	-.800	.424
	ETHNO	.026	.005	.240	4.781	.000
	CC	.014	.009	.088	1.640	.102
	SII	.000	.004	-.004	-.079	.937

a. Dependent Variable: outfit3

Outfit 4: dress

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SII, gender, age, ETHNO, travel, edu, CC[b]	.	Enter

a. Dependent Variable: outfit4

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.262[a]	.068	.051	.628

a. Predictors: (Constant), SII, gender, age, ETHNO, travel, edu, CC

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.702	7	1.529	3.873	.000[b]
	Residual	145.669	369	.395		
	Total	156.371	376			

a. Dependent Variable: outfit4

b. Predictors: (Constant), SII, gender, age, ETHNO, travel, edu, CC

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.104	.327		3.373	.001
	gender	.074	.069	.055	1.074	.284
	age	.053	.050	.057	1.069	.286
	edu	-.056	.032	-.094	-1.739	.083
	travel	-.008	.030	-.014	-.262	.793
	ETHNO	.022	.006	.187	3.664	.000
	CC	.018	.009	.105	1.920	.056
	SII	-.003	.004	-.040	-.730	.466

a. Dependent Variable: outfit4

Outfit 5: bags

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SII, gender, age, ETHNO, travel, edu, CC[b]	.	Enter

a. Dependent Variable: outfit5

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.315[a]	.099	.082	.504

a. Predictors: (Constant), SII, gender, age, ETHNO, travel, edu, CC

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.318	7	1.474	5.792	.000[b]
	Residual	93.900	369	.254		
	Total	104.218	376			

a. Dependent Variable: outfit5

b. Predictors: (Constant), SII, gender, age, ETHNO, travel, edu, CC

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.277	.263		4.860	.000
	gender	-.004	.055	-.004	-.080	.936
	age	.018	.040	.023	.442	.659
	edu	-.080	.026	-.164	-3.085	.002
	travel	-.031	.024	-.066	-1.252	.211
	ETHNO	.015	.005	.158	3.138	.002
	CC	.024	.008	.169	3.133	.002
	SII	-.004	.003	-.058	-1.074	.283

a. Dependent Variable: outfit5

Outfit 6: shoes

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SII, gender, age, ETHNO, travel, edu, CC[b]		Enter

a. Dependent Variable: outfit6

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.361[a]	130	.114	.607

a. Predictors: (Constant), SII, gender, age, ETHNO, travel, edu, CC

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.337	7	2.905	7.892	.000[b]
	Residual	135.833	369	.368		
	Total	156.170	376			

a. Dependent Variable: outfit6

b. Predictors: (Constant), SII, gender, age, ETHNO, travel, edu, CC

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.439	.316		7.718	.000
	gender	-.279	.067	-.207	-4.173	.000
	age	-.019	.048	-.020	-.388	.698
	edu	-.114	.031	-.189	-3.623	.000
	travel	-.049	.029	-.087	-1.681	.094
	ETHNO	.018	.006	.158	3.198	.002
	CC	.010	.009	.059	1.115	.266
	SII	-.005	.004	-.057	-1.076	.283

a. Dependent Variable: outfit6

5.8 Traditional outfit: (outfit1&2)

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SII, gender, age, ETHNO, travel, edu, CC[b]	.	Enter

a. Dependent Variable: TRA

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.214[a]	.046	.028	1.31524

a. Predictors: (Constant), SII, gender, age, ETHNO, travel, edu, CC

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30.591	7	4.370	2.526	.015[b]
	Residual	638.316	369	1.730		
	Total	668.907	376			

a. Dependent Variable: TRA

b. Predictors: (Constant), SII, gender, age, ETHNO, travel, edu, CC

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.020	.685		5.869	.000
	gender	.202	.145	.073	1.398	.163
	age	-.205	.104	-.106	-1.969	.050
	edu	-.041	.068	-.033	-.605	.545
	travel	-.002	.064	-.002	-.038	.970
	ETHNO	.037	.012	.156	3.016	.003
	CC	.013	.020	.036	.651	.515
	S	-.005	.009	-.032	-.571	.568

a. Dependent Variable: TRA

5.9 Non- traditional outfit: (outfit 3, 4, 5 and 6)

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SII, gender, age, ETHNO, travel, edu, CC[b]	.	Enter

a. Dependent Variable: NONTRA

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.359[a]	.129	.113	1.80744

a. Predictors: (Constant), SII, gender, age, ETHNO, travel, edu, CC

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	178.576	7	25.511	7.809	.000[b]
	Residual	1205.466	369	3.267		
	Total	1384.042	376			

a. Dependent Variable: NONTRA

b. Predictors: (Constant), SII, gender, age, ETHNO, travel, edu, CC

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.867	.941		6.233	.000
	gender	-.176	.199	-.044	-.886	.376
	age	.095	.143	.034	.666	.506
	edu	-.330	.093	-.185	-3.538	.000
	travel	-.110	.087	-.065	-1.259	.209
	ETHNO	.080	.017	.234	4.740	.000
	CC	.067	.027	.129	2.437	.015
	SII	-.012	.013	-.050	-.940	.348

a. Dependent Variable: NONTRA

All Outfits:

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SII, gender, age, ETHNO, travel, edu, CC[b]		Enter

a. Dependent Variable: OUTFIT

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.335[a]	.112	.095	2.58377

a. Predictors: (Constant), SII, gender, age, ETHNO, travel, edu, CC

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	310.968	7	44.424	6.654	.000[b]
	Residual	2463.403	369	6.676		
	Total	2774.371	376			

a. Dependent Variable: OUTFIT

b. Predictors: (Constant), SII, gender, age, ETHNO, travel, edu, CC

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	9.887	1.346		7.348	.000
	gender	.026	.284	.005	.092	.927
	age	-.110	.204	-.028	-.537	.592
	edu	-.371	.133	-.147	-2.783	.006
	travel	-.112	.125	-.047	-.900	.369
	ETHNO	.118	.024	.242	4.851	.000
	CC	.080	.039	.109	2.036	.042
	SII	-.017	.018	-.051	-.948	.344

a. Dependent Variable: OUTFIT

Appendix 4

Number of the enterprises operating under fashion in Oman Below is direct message in tweeter sent to National Centre for Statistics and information (NCSI). The message is translated. Me: My master's dissertation is on marketing and I need statistics on small and medium enterprises in Oman as well as Omani fashion business. Please help me get the statics because I look for them on the website, but I didn't find any information regarding them. NCSI: Hello, We don't have date on small and medium enterprises currently. About the field of fashion, we lack precise information about it, however; some information could be obtained from commercial activity registered in the commercial register of an enterprise. Me: Can I have the statistics of the commercial activity of those enterprise? NCSI: Good morning. Apologies for being late. The total number of the enterprises operating under fashion and the licenses permitted for them 3633 Me: Thank you very much Screen shoot of the message below.


12:58 PM
83%
NCSI
@NCSIOman
غير موجود وإنما حسب النشاط التجاري المسجل في السجل التجاري للمؤسسة.
8/4/16, 5:53 AM
هل بإمكاني الحصول على احصائيات للنشاط التجاري للمؤسسات ؟
8/4/16, 8:11 AM
صباح الخير... نعتذر على التأخير
8/9/16, 6:03 AM
التراخيص والمحلات العاملة في مجال الموضة والازياء بلغ عددها 3633
8/9/16, 6:04 AM
شكرا جزيلا
8/9/16, 11:33 AM
Start a new message
Home
Notifications
Moments
Messages
Me
12:58 PM
83%
NCSI
@NCSIOman
انا طالبه احضر الماجستير ف التسويق واحتاج احصائيات لعدد المشاريع الصغيرة والمتوسطة في سلطنه عمان..
كما انني احتاج احصائيات للمشاريع العمانيه في مجال الموضة والازياء..
اتمنى الافادة.. لانني بحثت في الموقع ولم استطيع ان اجد اي معلومه في هذا الخصوص
8/3/16, 3:39 PM
اهلا وسهلا بك..
في الوقت الحالي لا نمتلك بيانات عن المشاريع الصغيرة والمتوسطة.
مجال الموضة والازياء بشكل دقيق
غير موجود وإنما حسب النشاط التجاري المسجل في السجل التجاري للمؤسسة.
Start a new message
Home
Notifications
Moments
Messages
Me
72

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How Close Are Macro-Economics/Macro-Thermodynamics? The Knowledge & Energy Pair: Economics in the Net Zero Era

By Hemmat Safwat[*]

The paper has two academics Parts (Themes in the Paper's Title); the first addresses several common features that relate to the theoretical bases of the two discipline Macro-Economics and Macro-Thermodynamics, the second Part is underlining the paradigm that the author proposed in 2022 (the knowledge-energy "KE" pair) that is present in all activities encountered in any enterprise. In Part I, the author elaborates on two new terms in Macro-Economics; Income Potential Function "IPF", Labor Effort "LE", that were introduced in 2002 through his work with Professor Dr. Ibrahim M. Oweiss. Innovations represent a key factor in deriving the developments of both nation's economies and electrical power systems. Part I opens new areas for generalization of theories in Macro-Economics based on established theoretical treatments in Macro-Thermodynamics. In Parts I&II, many applications from Economics and Thermodynamics that exhibit similar trends are cited supporting the close relation of the first part of the Paper's title. The novel concept of the KE pair in part II could lead to a knowledge measurement scale. Part III summarizes takeaways from Parts I&II. In Part IV, with the ideas and thinking behind the contents of Parts I&II, factoring his expertise in energy the author summarizes important considerations for stakeholders & economists dealing with nation's economies to meet the big challenges facing countries in the energy transition /decarbonization / Net Zero Era by 2030 and 2050. Relatively short times to transform the energy infrastructure that was built over more than a century (for many countries).

Keywords: *macro-economics/thermodynamics commonalities, innovations, knowledge & energy optimization, net zero era*

Background/Introduction

In 1987 the author took an economics course as part of the MBA program he was following; he recognized some similarities between some aspects with some of what he knew from thermodynamics that he studied in his under-graduate and graduate courses in mechanical engineering. In 1988, he discussed these initial ideas with Professor Dr. Ibrahim M. Oweiss – Economics Professor at Georgetown University who saw merits in these initial ideas and they agreed to jointly investigate the subject. They started collaboration but because of the author's continuous travels for his job, the progress of the joint investigation was slow. Safwat and Oweiss (2002) established analogies between terms of Macro-Economic and Macro-Thermodynamics. They further used thermodynamics practices to simulate some

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applications of economic theories. This approach did not gain much acceptance among economists as thermodynamics was not easy to comprehend to without spending some time to grasp its fundamentals. The author was discouraged except for one positive reaction to Safwat and Oweiss (2002) that was received from Nobel Economics Price recipient Dr. John Nash in 2005. Dr. Nash's comments were very complementary, but he warned us that it would not be easy to get this novel approach through the economics community. The author recognizes that perhaps because Dr. Nash was a mathematician, he could easily grasp the essence of what was included in Safwat and Oweiss (2002).

The author put aside undertaking further research on the subject as he was quite busy working at a senior position at Consolidated Contractors Group Offshore – in Greece. When he retired in September 2020, he embarked on a second journey building on what was reached in Safwat and Oweiss (2002). Unfortunately, Professor Oweiss was not available to collaborate on this second phase. The author decided to stay away from the equations of Thermodynamics in this second endeavor. He produced Safwat (2022).

In this paper, some key information from Safwat and Oweiss (2002) is summarized related to the first part of the title of this paper "How close is Macro-Economics/Macro-Thermodynamics?' – under Part I. Then building on the concepts introduced in Safwat (2022), the fundamental pillars for all activities within an enterprise "the pair of the Knowledge & Energy" is discussed under Part II.

In Parts I and II, the author attempted to simplify the thermodynamics information as much as he could to have the economics reader get over what could be initial comprehension difficulties. The reader can refer to the references for further details. Takeaways from Parts I & II are summarized in Part III.

In Part IV, the author presents some ideas for economists dealing with or exposed to national economies planning as they tackle the challenges of the Net Zero Era, based on his long experiences in energy and factoring the concepts of Parts 1-III. Lastly, Part V contains some concluding remarks.

Part I: Macro-Economics / Macro-Thermodynamics

Macro-Economics

In Macro-Economics generally one is dealing with results of the activities of the workforce in a country or a region – e.g., a state within a country or a group of countries. For example, a country with defined boundaries has a population and the working workforce of this population produces the products and services that make up the Gross Domestic Product (GDP) as measured in money. Beside the work force in the private industries, government agencies contribute to the GDP. Across the boundaries of the country there could be imports and/or exports. One may refer to the dynamics of what the overall workforce (in private and government agencies) produces and consumes. When it is services there is no material in the deliverables. The consumption includes that of the dependents of the working force. For products

there is a combination of services and material. Note, in some services, there may be some material in the delivery of the services e.g., in a restaurant.

The reader is referred to MacDonnel et al. (2018), Slavin (2020), and Karlan and Morduch (2024). In these textbooks' different representations of Macro-Economics are found. For further information, Journal of Macroeconomics, Elsevier (n.d.), American Economic Journal: Macroeconomics (n.d.), Journal of Economic Theory (n.d.) Elsevier, and Journal of Economic Theory (n.d.) Springer are examples of Economics Journals where Macro-Economic topics are covered.

Macro-Thermodynamics

In Macro-Thermodynamics, the engineer or the thermodynamics analyst defines a system with hypothetical boundaries. Interior to the boundaries is referred to as a system and outside the boundaries are the surroundings. Macro-Thermodynamics is concerned with the energy and mass changes of the system. The reader is referred to Cengel et al. (2023), O'Connell and Haile (2005) and Turns and Pauley (2018) for textbooks' covering various topics in Macro-Thermodynamics. Journal of Thermal Science and Engineering Applications (n.d.), International Journal of Thermodynamics (n.d.), Journal of Thermal Science (n.d.) Springer and Journal of Engineering for Gas Turbines and Power (n.d.), Journal of Engineering for Gas Turbines and Power (n.d.) are examples of journals that deal with relevant research in key areas of Thermodynamic Cycles and Energy conversion schemes.

Enterprises Operation / The Functioning of the Enterprise

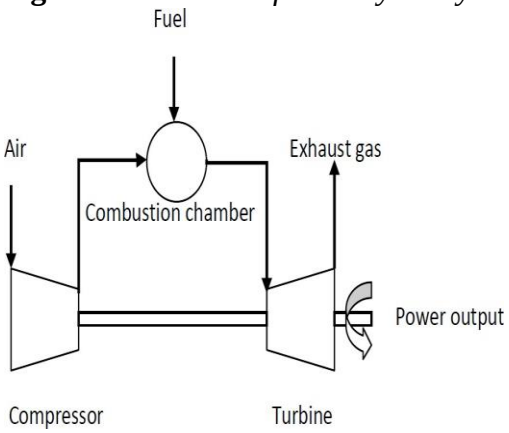
Enterprises form the foundations of the economy of a country. An enterprise deploys capital investment in a plant or a service center (equipment and facilities). These are installed and built prior to start of operations. In the productive (operational) phase, the workforce through variety of processes complete deliveries of products or services. Through the repetition of the sequence of the processes the production over a period (say annually) is measured. The workforce takes the central role. We also observe that the processes utilize inputs and those end up as useful deliverables products but also in the output there is rejection/waste. For the workforce, in recent years the human knowledge is the predominant contribution rather than the handwork in previous times. Further elaboration of this point is discussed in Part II.

Heat Engines -Thermodynamic Cycles/Power Plants

Based on two laws of Macro-Thermodynamics, thermodynamic cycles under different names such as Rankine, Brayton, Otto, Diesel. Ericson, others have been introduced by pioneers as early as in the 18th century (generally referred to Heat Engines) – Cengel et al. (2023), O'Connell and Haile (2005) and Turns and Pauley (2018). A cycle consists of sequence of processes that start from one thermodynamic state and ends at same state. In Thermodynamic terminology, a state

of a medium is defined by two independent properties such as temperature, pressure, or specific volume (volume per unit mass / the reciprocal of density). Figure 1 (Cengel et al. 2023) shows as an example a schematic of the Brayton Cycle that is the basis of the operation of gas turbines.

Figure 1. *Schematic of the Brayton Cycle – Basis for the Operation of Gas* Turbines



Closed System and Open System & Steady Flow Open System

A closed system is defined as a system for which there is no mass transfer across its boundaries i.e. from within the system or from the surroundings. An Open system is a system where there is mass flow across the boundaries. A Steady Flow Open System is an open system that there is no accumulation of mass or energy within the system, further the conditions of the incoming and outgoing states are constant with time (Cengel et al. 2023, O'Connell and Haile 2005, Turns and Pauley 2018).

Fundamental Laws in Macro-Thermodynamics

1st Law: mass and energy are conserved. For a system, between two sates i and ii, the net mass and net energy coming into and out of the system (in -out) is equal to the stored within the system.

2nd Law: for a heat engine operating in a cycle between two high and low temperatures where heat addition takes place at the high temperature, inherently there will be rejected heat at the low temperature. The essence of this law simply is "in a thermodynamic cycle there is always an efficiency in converting heat to work". Work being in a cycle is the difference between heat added minus heat rejected. An ideal cycle referred to as Carnot cycle that has constant temperature heat addition and constant temperature heat rejection processes separated by two; constant entropy processes (isentropic processes). For thermal cycles with maximum temperature and minimum temperature but not at constant values for the heat addition and rejection that cycle will have a lower efficiency than the Carnot operating at the constant maximum and constant minimum temperature. A corollary result from the Carnot cycle, the higher the temperature of the heat addition the higher the thermal efficiency, and the lower temperature of the heat rejection the

higher the thermal efficiency (Cengel et al. 2023, O'Connell and Haile 2005, Turns and Pauley 2018).

Origins of Knowledge & Energy

Knowledge originates from humans and energy originates from nature. It is interesting to mention the working of the human body systems, e.g., circulatory, digestive, respiratory, and nervous systems with the brain having the prime role in dealing the control of the functioning of the various body parts and with knowledge storage/ retention of information, please refer to Safwat (2022) for further details.

Premium Contents in Products and Services

Consumers have different appreciation (valuation) for the products and services, the appreciation reflects perceptions of the utility and the sophistication of the knowhow that went into the preparation of the product or service.

Categories of Energies

With reference to Table 1, energy transformations to "forms of use", are what we are after in Macro-Thermodynamics, heat is the energy associated with temperature difference. Mechanical energy referred to as work. In dynamics terms it is (integral F.dx), Force "F" over distance "x". This is the most desirable form of energy as it has versatile utilization, in simple form moving a weight over a distance, and in more handy way it is electricity that can be transmitted across long distances. As noted above to produce work according to the second law of Thermodynamics in a thermal cycle from a heat there will be inherently heat rejection, thus the work will be only a fraction of the added heat. The ratio of the output to the added heat is thermal efficiency. Please refer to discussions covering heating value and electrical output from fossil fuels and the CO_2 emissions (Table 2).

Power Plants

- Fossil and Nuclear Plants (based on Thermodynamic cycles)
- Renewable Energy
    - Hydro – (Transformation of Potential Energy to mechanical / electrical energy).
    - Solar – (Transformation of Radiation Energy into electrical energy).
    - Wind (Transformation of kinetic energy to mechanical / electrical energy).
- Fuel Cells (Transformation of chemical energy to electrical energy).
- Electrical Energy Storage "EES"
    - Battery
    - Hydro pump storage
    - Compressed air storage

U.S. Energy Information Administration (n.d.), Energy European Commission (n.d.) and International Energy Agency (n.d.) are sources for useful energy data and information.

Analogous Terms Macro-Economics / Macro-Thermodynamics

Table 1. *Macro-Economics Terminology versus Macro-Thermodynamic Terms (Safwat and Oweiss 2002)*

#	Economics Term[E,1,3]	Corresponding Thermodynamics Term[2]
1	Capabilities[E] [A] represent internal or latent attributes that a human being possesses, which enables this person to undertake an activity *or complete a part of an activity*[2]. It is a generalized of what we frequently refer to as "Knowledge [K]"	Energy "E"
2	Services[E] [SV] come about resulting from changes of Capabilities. /Knowledge Transfer.	Changes in Energy / Heat [Q]
3	Utility[E] [U] is the total satisfaction derived from the consumption of goods or Capabilities changes as could be manifested through services.	Work [W]
4	Capital[E] [***K***] consists of the durable produced goods that are in turn used in production. The major components of capital are Equipment, Structures/Facilities and Inventory. In accounting and finance, "capital" means the total amount of money deployed by the shareholders in the corporation (equity & debt).	Same – Capital [***K***] required to set up the power plant.
5	Convertibility[E] Services/Utility; money is the term that resembles the convertibility.	kCal /Joule for conversion between heat and work or vice versa
6	**Income Potential Function**[E] (IPF), while income is the flow of wages, interest payments, dividends, and other receipts to an individual or a nation during typically one year, the **Income**[E] **Potential Function** is a measure of usefulness. The higher the level of technology the higher the **IPF**.	Temperature "T"
7	Marginal Utility[E] [M_u] the additional utility arising from consumption of an additional unit of the commodity.	Pressure "P"
8	Quantity [N] is the repeat of a commodity. The specific quantity is number of units per person.	Volume "V" Specific Volume "v" (volume per unit mass)
9	Labor is generally defined by the group of people of age of 16 and older who are either employed or unemployed. However, a more representative term that was introduced by the authors of **Book 1**, is **LABOR EFFORT**[E] [LE] which depicts the effort exerted by humans. Specific Labor effort is [le] Labor effort per person.	Entropy "S" Specific entropy "s" (entropy per unit mass)

1) Superscript "E" designates an Economic term.
2) Thermodynamics Term.
3) Bold terms were newly introduced in Safwat and Oweiss (2002).

From Table 1, the analogous economic and thermodynamic terms are listed below:

1) Capabilities [A] – Energy [E]
2) Capabilities Change / Services [△A/SV] –Energy Change / Heat [△E/Q]
   Services [△A/SV]– Heat [△E /Q]
3) Utility [U]– Work [W]

4) Capital is really behind what is set to have production under economics or setting the power plant in thermodynamics. The Capital [***K***] (measured in money) is used in setting the production facility or the power plant.
5) Convertibility: Money / Kcal/Joule
6) Marginal Utility [MU]- Pressure [P]
7) **Income Potential Function** [IPF] – Temperature [T]
8) Quantity Number of commodities [N] – Volume [V]
   specific quantity is a commodity unit [le] – specific volume per unit mass [v].
9) **Labor Effort** [LE] – Entropy [S]
   specific labor effort per commodity [l] -specific entropy per unit mass [s]

It is noted that in thermodynamics the medium is generally the fluid that is in the system under consideration or used in the thermodynamic cycle. For economics the equivalent is an ensemble of commodities with the specific quantity being one unit of the commodities.

The two terms IPF and LE may be difficult at first for an economist, but they were reached after extensive debates / deliberations between the author and Professor Dr. Oweiss who took the lead in crystalizing the economic terms as presented in Table 1.

To supplement the above definitions, the following key equations are noted:

Economics: dSV = IPF dLE analogous to Thermodynamics
dQ = T dS Eq. 1

Economics dU= M_u dN analogous to Thermodynamics
dW= P dV Eq. 2.

In Safwat and Oweiss (2002), a **Capital Engine**^{E} was introduced analogous to the heat engine. Then borrowing on known well established practice in thermodynamics two charts were devised IPF-LE analogous to T-S, and M_u – N analogous to P-V, respectively. For the idealized Capital Engine equivalent to the Carnot cycle (based on the second law of thermodynamics), led to equivalent conclusions:

The higher IPF the higher the efficiency in the convertibility of services– (knowledge level under which technology falls).

From Eq. 1, in the economics terms of Table 1 and introducing the term Ecapby (E- capability), one gets Eq. 3 and Eq. 4 for the Ecapby1 and Ecapby2, corresponding to the two IPF's; the higher IPF at 2 and a lower one 2'. In both cases the IPF_{ref} corresponds to the IPF of the surroundings.
The added Ecapby is

Ecapby = $\triangle$LE . (IPF). Eq. 3.

ECapby1 = $\triangle$LE . (IPF1). Eq. 4

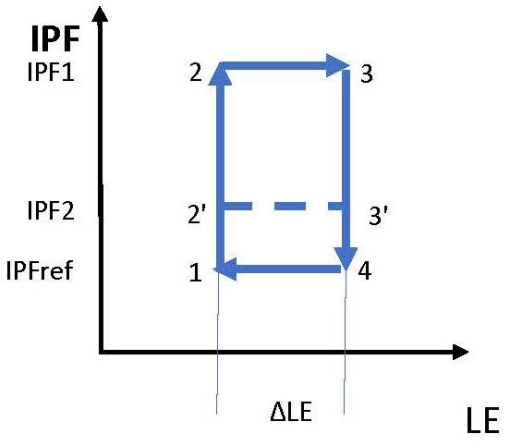
ECapby2 = △LE . (IPF2)

The disposed (rejected) Ecapby is

$ECapby_{ref}$ = △LE . (IPF_{ref}). Eq. 5

The term Ecapby (E-capability) is simply conveying that the economic system having a higher Income Potential function IPF1 that is higher than that of IPF2 (will yield larger utility compared to the system at a lower IPF2. IPF_{ref} is the lowest IPF that corresponds to the surroundings. A starting guess could be the IPF corresponding to the minimum wage, or somewhat lower value. Figure 2 depicts the above statements.

Figure 2. *IPF - LE Diagram for Two Ideal Cycles*



In Figure 2 Ecapaly for two cycles IPF1 higher than IPF2 – the two cycles (1234) and (12'3'4) use the same IPF_{ref}.

Focusing on an economic system; we define humans in a certain location with a refence conditions outside the system that is the surroundings at that location the lowest Income Potential Function is IPF_{ref}. To bring this term closer to what we generally we see in different countries, that is what drives the minimum wage. As suggested earlier. The term Ecapby is showing the effect of the level of knowledge as represented by the higher IPF.

If one considers a workforce economic cycle "WFEC", the workforce is repeating sequence of processes (a cycle). The efficiency of the idealized WFEC "η" can be written as the ratio of:

$\eta = (ECapby1 - Ecapby_{ref}) / ECapby1$ Eq. 6

Substituting from Eq. 4 into Eq. 6, we obtain:

$$\eta_1 = (IPF_1 - IPF_{ref})/IPF_{1.}$$

& Eq. 7

$$\eta_2 = (IPF_2 - IPinF_{ref})/IPF_2$$

Please refer to further elaboration under the demonstrative examples later. Safwat and Oweiss (2005) built on their work (2002) in presenting a perspective for "Technology & Energy Utilization as Stimulant to Economic Growth".

Parallelism of Products & Services Markets and Electricity Systems

Safwat and Oweiss (2002) and Safwat (2022) argued that historically since the bartering era started the two persons that were exchanging say cotton versus wheat. The two were trading the value perceived by the two for the worthiness of the knowledge of planting the two crops, and the utility of the two items. This premise has dominated the trade ever since, the value of knowledge that goes in the making the product or the service provided is the major determinant of the value of the traded item. We turn to examining markets and electric systems.

Figure 3 shows the simplified presentation of markets of products and services. Figure 4 depicts a simplified electrical system which has evolved in recent years to include generation at some consumers. That was not the case before, as the electrical system was subdivided to three subsystems: generation, transmission, and distribution with unidirectional flow of the electricity between the subsystems starting from the generation to the transmission to the distribution where primarily the consumers connected to. Large consumers connected directly into the transmission subsystem. It is noted that related to the last theme of this paper, very critical transformation of the electrical systems is underway – "digitization" to cope with the variabilities that are coming about due to increased renewable energy. Also, intermittency of renewable energy led to incorporating of energy storage systems (ESS) such as electrical batterie at some nodes in the electrical system.

Figure 3. *Schematic of the Markets of Products and Services (Safwat 2023)*

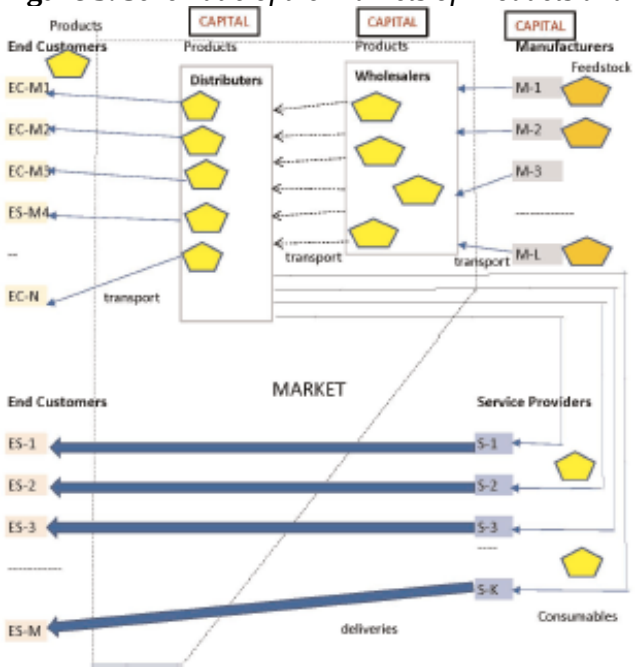
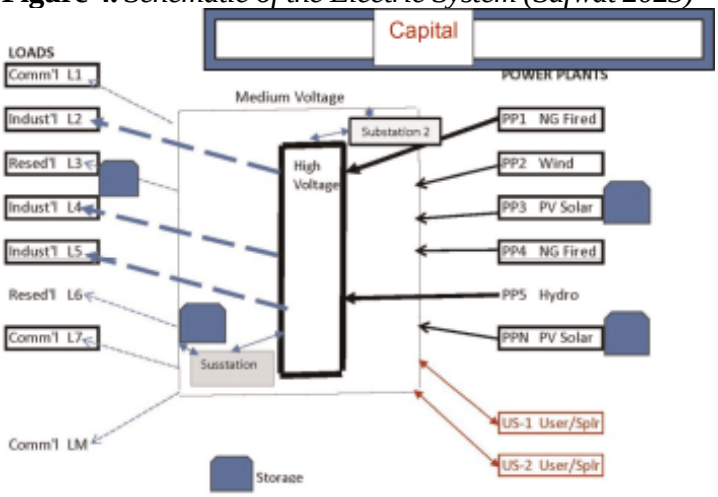


Figure 4. *Schematic of the Electric System (Safwat 2023)*



IEEE Transactions on Power Systems (n.d.) is an excellent source for research of Electrical Transmission Systems. Note that generally in markets we deal with different commodities and products / services each could have its own market characteristics, while in the electrical system we primarily are dealing with electricity. Further, one notes the well-known fact that for countries GDP and electricity growth trends are similar and go together. It is worth noting Co-Generation plants, in these plants we make use of some of the heat say leaving the gas turbine in heating water for district heating or for desalination before lower temperature heat is rejected, thus the combined useful electricity and heat in the cogeneration represent higher utilization of the heat added and minimizing the heat

rejected. In industries there are ample examples for having several different products from the stream of the production.

For a comparison of the characteristics of both the GDP changes and those of the electric system and the control of both refer to Safwat (2023), (inflation – interest rate and Voltage & Frequency, respectively. Safwat (2022) and Safwat (2023) also discuss money, capital/investments.

Demand & Supply

Referring to the comparison of the products and services markets and the electrical system schematics in Figures 3 and 4, one sees the two are set to deal with supply commensurate with the demand – that is the underlining common structure for both. The electrical system has a distinctive characteristic that the demand & supply are at the same moment /time.

The Convergence of the Electricity Market to Commodity Markets

With privatization that started and grew from the late part of the last century, the vertical integrated electrical system was unbundled in many countries, and the generation and distribution were privatized in most countries while the transmission subsystem remained public. With privatization electricity markets were introduced and now we see merchant electricity markets in many countries, where the buyers of electricity make price bids for future electricity deliveries in a stock type market. Another trend found its way to the electricity when the users were enabled to generate renewable energy electricity, use it for their own and sell to others surplus through the grid. The old electrical system generation, transmission, and distribution had one direction, now has possibility for electricity to flow from nodes in the network, and the nodes could have both generation and consumption. Another trend that emerged is emergence of the natural gas piping networks – regional and national systems in similar form to the electrical systems. In many of the natural Gas piping systems the power plants are major receivers of the gas. With the natural gas systems supporting other users such as industrial users beside the power plants the electrical systems now operate under some constraints coming from the natural gas flow. With the emergence of renewable generation - wind power and solar power plants with their intermittent characteristics the electrical system now includes extensive digital meters to cope with multitude of conditions that were not in the old electrical system. The private generation brought many features of the commodity markets to the electrical system. Now one can see that the electrical system has a lot of similarities to the markets of commodities.

Examples

To demonstrate what messages could be obtained from the theoretical treatment discussed in Part I, as an example we refer to Figure 2 and its related discussions, specifically Eq. 7. If one perceives for the workforce of a nation as an ensemble working between the low IPF_{ref} and either the high IPF_1 or IPF_2, the efficiency of the workforce economic cycle "WFEC "would be η_1 and η_2, respectively. η_1 will be greater than η_2 What is IPF_{ref}? It corresponds to the lowest wage, let us say the minimum wages in the country. If one uses the simplified hypothetical Ideal. The author chose to use the term (workforce economic cycle) to differentiate it from the economic cycle generally used in economics when the economy goes between two successive of depressions with a recovery period in between. While an idealized WFEC is hypothetical, that cannot be realized it still gives indicators that can help in understanding causes and effects. For instance, the economy of nation with a high technological advanced work force (e.g., a developed country) could be corresponding to IPF_1 versus in a developing country with IPF_2 (if one keeps IPF_{ref} the same).

Another situation that one can see from Eq. 7, is that if a country is considering the increase of the minimum wage, it should realize an advancement in the higher IPF to sustain a growth, represented by the WFEC's efficiency. Further, a plausible cause of what we have been dealing with the phenomenon of inflation in a country, recognizing that the waste or the rejected Ecapby at the ref. continues to cause the IPF_{ref} increase because of the limited size of the surrounding. The moves by central banks to curb inflation by slowing the economy, indirectly start to slow the increase in IPF_{ref}.

PART II: The Knowledge & Energy Pair

Knowledge is a produced by humans an entail accumulation of observations and practices as well as human creativity in devising new ideas. Knowledge covers wide spectrum, it spans many life fields and industries etc. Under knowledge, comes education, training, information, data, technologies, knowhow, propitiatory information, patents. digital technologies have had a profound impact on many fields, advanced computing, communications, internet, artificial Intelligence, robotics, etc.

Innovation relates to knowledge, humans come up with ideas that improve or introduce new practices. Research and Development "R&D" in private entities and governmental agencies is vital for growing the economies as well the boosting the competitiveness of an enterprise.

Energy is not a substance, but it is starts from nature. Over the years, historically, man was able to find and harness different sources for energy; fossil fuels, nuclear energy renewable energy (solar and wind), etc. In the case of fossil fuels (coal, oil, and natural gas), when the energy contained in the fuel is released through chemical reaction of burning due to oxidation from the Oxygen of air, in the form of heat, the liberated heat can be used in variety of ways in many applications.

In the case of nuclear fuel, heat is liberated due to atomic splitting of nuclear fuel mostly from Uranium. Through Macro-Thermodynamics, heat cycles were adopted to convert the heat to mechanical work and electricity. The mechanical work and electricity provided more versatile energy that can be utilized in many applications. That was behind the growth of the electric industry in the 20th century. Electricity use evolved through domestic (home), commercial and industrial sectors of the economy.

Historically, wind turbines, water wheels were built to replace animals in movements that is harnessing kinetic and potential energy. In the last two decades a significant trend to use renewable energy from solar and wind has swept the world to avoid and combat the Carbon dioxide emission associated with the massive use of fossil fuels in industrial and electricity generation.

Electricity is a form of energy beside being versatile, can be transferred in effective ways, that led to the evolution to the electric systems consisting of the generation, transmission (High Voltage), and distribution subsystems. The electric systems were interconnected and the power plants capacities under generation grew, and generation became centralized in relation to the areas being served by the electric system. The centralized power generation approach started to change towards a distributed direction in recent years.

Why the Knowledge & Energy Pair

Safwat (2021) underlined his early thinking about the importance of the Joule as he attempted to address knowledge and energy combinations. When one examines all processes/tasks in an enterprise, always the two inputs are present: a knowledge component and an energy component. The weight of one could be bigger than the other. This paradigm was introduced by Safwat (2022) and can be easily understood, for instance in the case of mining, if one realizes that material is only a conveyance means of whatever utility is desired, the material extraction and hence its use is only possible because of the knowledge and the energy expended in the extraction otherwise the material will be still in the ground. The value added by the labor is the result of the accumulation of the knowledge by the individual and applying that knowledge in the task he/she is engaged in. The energy utilized in the task could be the energy to run the computer (electricity) that the individual is using in the performance of the task. Further, one can envisage the knowledge and the energy pairs in the engineering, manufacturing processes of equipment and the construction of facilities, etc. Tasks in different fields e.g. accounting, health care etc. use processes/activities that have knowledge and energy together "the KE pair".

In the process the energy could be heat (low level category) or electricity (high level category). Improvements of for a product or a delivered service come about through **innovations**, meaning reduction of the input combination of the KE pair and or the reduction of the rejected waste of the KE combination. Often, a quality enhancement in the knowledge leads to lowering of the energy input.

Optimization of Inputs to Attain Target Quantity of Useful Output

Safwat (2022) proposed a model for the knowledge & energy pair forming the basis of all activities in an enterprise. Safwat (2022) further proposed representing knowledge in the same units of energy i.e., Joules. The premise behind this proposition is that for an enterprise, it is to aim at optimizing the inputs of both knowledge and knowledge to reach the desired output, eventually measured in currency.

Data for compensation of the labor and the prices of electricity in currency from USA data was used to calculate the Joules for knowledge (equivalent to energy). Macro-Economic data for the USA can be found in U.S. Bureau of Economic Analysis (n.d.), U.S. Bureau of Labor Statistics (n.d.), U.S. Department of Commerce (n.d.) and Board of Governors of the Federal Reserve System (n.d.). Please refer to Safwat (2022) for some examples. In these examples the energy was electricity, however the knowledge was from different categories (levels). Safwat (2022) recommended investigating the levels of knowledge including the possibility of examining a comparable term to exergy This, Thermodynamic Term which was not included in Table 1 to avoid some difficulties in explanation of this term at this point.

The term ECapby (appearing in Table 1) reflects the knowledge innovation. It is through multitude of factors the knowledge level of the individual (person) is boosted. The most important one is innovation.

While the above theoretical ideas and proposed concepts shed insights that are useful as they are quite general and have wide applicability. However, for a practitioner they are not ready for use. In the author's opinion the search for the scale of the Income Potential Function that is equivalent to the Temperature scale in Thermodynamics is the key to raise the confidence of the treatise covered in Part I to wide application.

Capital (Investment) is quite important; it is important for a project in setting up the bases required for the production processes. Safwat (2022) elaborated on the estimation of capital required for investments by addressing the processes of the project development phases starting from the initial feasibility study, project planning and implementation (EPC) – Engineering, Procurement and Construction leading to the commissioning of the plant or service center to start the operational phase. For more details on project development please refer to Journal Construction Management and Economics (n.d.) Springer and International Journal of Project Management (n.d.) Elsevier.

For project financing considerations a good source of more information is Journal of Project Finance (n.d.). A comprehensive description of private project development can be found in Safwat (2007).

For further details on project development application refer to Safwat (2022) for the initial phases including construction and then during the operational phase when one deals with direct and indirect processes and with sourced out activities. The sourced-out activities means that the sub-supplier or subcontractor is dealing with the pertinent processes still the KE pair is present in all the processes. As noted earlier the markets form the channel through which the products and services are

delivered from producers to consumers. Still the processes in the transport involve the KE pair.

Demonstrative Example

One refers to Gobb and Douglas (1928) the "Theory of Production" commonly accepted in economics. Gobb and Douglas related production to two factors - labor and capital; they put forward this hypothesis almost a century ago. In today's conventions this amounts to a correlation rather than a theory. This does not take anything of Cobb & Douglas who made their contribution in 1928. They used a formula of the product of the two factors each with an exponent that they introduced and verified. But as economists realized the two factors may be oversimplifying the topic, they started adding factors, yet in most cases the related work amounted to correlations for limited application range, i.e. not with general applicability.

The author based on his extensive work in construction, can say that this approach is a top-down approach which in practice is used for a quick price estimate but with realization of the limitations of the data it is based on. The other approach is a bottom-up which is generally more time consuming, requires detailed data-base but yields accurate estimate. Advancement of the quantification of the knowledge as suggested in Part. II and the proposition of the KEC model. Safwat (2022 and 2023) provide an alternative "two factors Knowledge and Energy" that can produce dependable results that have true generalization.

It is worth citing Journal of Energy Economics (n.d.) Elsevier, and International Association of Energy Economics (n.d.) that are journals dealing with energy economics. Further important and relevant information can be found from the following institutions World Bank (n.d.), Organization of Economic Cooperation and Development (n.d.), International Monetary Fund (n.d.).

Part III: Takeaways from Parts I & II

From Part I, many aspects that have common meaning or essence in both Macro-Economics and Macro-Thermodynamics have been noted:

1. Table 1 shows analogies between the terminologies of Macro-Economics & Macro-Thermodynamics. It opens good opportunities under fresh thinking. The two new terms "Income Potential Function & Labor Effort" are two terms that can be quite useful in new endeavors in economic theories.
2. The realization of the thermal power generation plants is built on the theoretical Macro-Thermodynamics / heat engines. Whether this can have a parallel relation in Macro-Economics is worth exploration. The similarity aspects between markets and power systems that are included in Part I, is an example of possible studies based on this premise.
3. All applications in Macro-Thermodynamics are governed by the two laws that form cornerstones for all their theoretical bases. The author believes

counterparts to these laws exist and establishing such laws will render a distinctive new advantage to Macro-Economic theories.

4. Innovations are key to improvements. Innovations lead to increasing the Income Potential function.
5. The demonstrative examples though hypothetical, they indicate that there are merits behind the economics treatment introduced.

From Part II,

6. The importance of knowledge is underlined. The presence of knowledge and energy together the KE pair in all tasks and processes/activities in enterprises represents a key fact that should be realized by businesses and more generally in Macro-Economics.
7. The notion of optimization of the inputs of knowledge and energy is a very useful tool in search of more competitive products and services.
8. The possibility of measuring knowledge in the units of energy warrants further investigation.
9. The level of knowledge is of utmost importance and hence for Macro-Economic policies it deserves the appropriate attention.
10. The simultaneous presence of knowledge and energy in all tasks, underlines the importance of attending to growing knowledge and energy resources in any nation to sustain desirable economic growth. The last two items form key drivers for a country in the transformation related to Energy Transition Net Zero Era discussed in section IV below. Before leaving this part, we must underline the impact of rejected knowledge & energy waste and the environmental effects associated with the economic activities and the associated energy uses.

Part IV: Relevance for Economics in the Net Zero Era

Just a short simple note about a plausible explanation for the global warming in light of Part I, the surrounding on the global scale is the environment of the earth, if the surrounding is unrestricted then it is unlimited – infinitely large, but if it is limited because of the buildup of the CO_2 layer in the outsider strata above the earth, then we have a limited reservoir though large, when we burn enormous amounts of fossil fuel per day as World is doing the rejected heat from power plants, industrial plants, transport land, marine and aviation in a trapped atmosphere leads to builds up to the increased temperature in the earth.

Another point that warrants noting is what are the CO_2 emissions from fossil fuels. Please refer to Table 2 showing representative emissions CO_2 from burning 1 kg from different fuels, and assuming a typical engine of power plant efficiency the electrical kWh_e/kg and the CO_2 per kWhe.

Table 2. *Representative Emissions from Different Fossil Fuels that Have Been Used in Transport and Power Generation (Safwat 2022)*

		kWh/kg fuel[1]	BTU/lb fuel[3]	Kg CO_2 /Kg fuel[1]	Thermal Eff.	kWhe/kg fuel	kgCO_2/kWhe
Methane (natural gas)	EG Electrical Generation	15.4	23,900.00	2.75	60%	9.24	0.3
Gasoline	Transport	12.9	19,900.00	3.3	45%	5.81	0.57
Kerosene (Jet)	Aviation	12	18,500.00	3	45%	5.4	0.56
Diesel	Transport	12.7	19,605.00	3.15	50%	6	0.5
Heavy fuel oil (No.6/Bunker C)	EG Electrical Generation	11.6	18,000.00	3.11	33%	3.83	0.81
Coal Bituminous	EG	8.4	13,000.00	2.38	35%	2.94	0.81
Coal Lignite	EG	3.9	6,000.00	1.1	35%	1.365	0.81

The thermal efficiency is a typical value that the author introduced. Note the earlier note in part I, about the premium level for the kWh_e (Kilowatt-hour electrical) versus the kWh in the fuel as heat. Trends of CO_2 emissions of in the USA from various sectors, electrical generation, transport, industrial are followed closely. Similarly, the trends in various European countries are monitored and reported. The values in the last column give the reason for the preference of Natural Gas.

Referring to the emissions in Table 2, the emissions noted does not include emissions in the extraction and preparation of the fuel δ at the source, transport onshore at the country of origin δ_{OO} and marine transport to country of use δ_M and lastly transport onshore at the country of use δ_{OU}. Referring to the discussions of manufacturing in Part II, one notes that for products the energy that enters in the intermediate steps/outsourced is associated with emissions and the transports have also δs. More complexities particularly when there is a significant outsourcing in different countries for the product.

We turn to review important events related to the last theme of the paper's title:

The Paris Agreement (2015) - United Nations Framework Convention on Climate Change, Paris, Dec. 2015, signed by 165 nations. The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius.

World leaders came together in 2015 IV-3 and made a historic promise to secure the rights and well-being of everyone on a healthy, thriving planet. They adopted the Sustainability Development (2015) - encompassing Agenda and Goals. The UN issued the sustainability 17 goals. These goals are generally interrelated or interdependent. The 7th goal is "affordable and clean energy". Now appropriate sustainability programs are part of the culture of companies and governments. Since 2015 many activities have taken place to combat the global warming on an international scale.

The Intergovernmental Panel on Climate Change "IPCC" has issued several reports documenting the warming up and the negative effects that have been observed in many parts of the world, refer to the latest report IPCC AR6 Synthesis Report: Climate Change (2023). The IPCC has advocated a scenario for the world to keep the temperature rise to 1.5 C.

In 2017, further, under the auspices of the UN several COP United Nations Climate Change Conference, or Conference of the Parties conferences have been held. The latest were in COP26 -Glasgow UK (2021), COP27-Sharm ElSheikh Egypt (2022) and the most recent was in COP28-Dubai UAE in Nov. - Dec. 2023. Refer to COP23 Road Map to Net Zero (2023). Thus, a wide concern of the global warming, and the emerging consensus among the almost 200 countries to accelerate steps to reduce Carbon Dioxide CO_2 before it is too late. The inflation Reduction Act (2022) in the USA to support the Renewable Energy through tax incentive (2022). Further, 7 billion dollars for USA's first clean hydrogen hubs (2023) shows a multibillion support announced for major projects in the USA. Similarly, you find announcement in the Europe Commission proposes 166 cross-border energy projects for EU support to help deliver the Green Deal (Nov. 28, 2023supporting significant projects in Europe (2023). Significant recent movements in the USA by Department of Energy "DOE" U.S. Department of Energy (n.d.) and in Europe "European Commission "EU" Energy European Commission (n.d.) in formulating guidance for energy transition policies are noted.

From the brief summary of the recent events above, we note thr World has a major challenge to curb Carbon Oxide "CO_2" emissions. COP conferences over the years saw differences in the approaches between developed countries and developing & the less fortunate countries in Africa and islands. COVID-19 -2020 amplified the need for countries to cooperate on global crisis's, thus from 2021 there emerged a common thrust towards shifting to Renewable Energy and avoiding fossil fuels. Countries started making national commitments to limit CO_2 emissions. With the huge installed worldwide capacity of fossil power plants, and because of significant levels of CO_2 emissions from coal, and oil-fired power plants (Table 2), the current consensus is for all countries to retire the coal and oil-fired plants. Now there is still debate whether it will be possible to eliminate natural gas fueled power plants (emitting less CO_2 per kWh of generated electricity, compared to coal and oil-fired plants). Initially there was a direction to eliminate fossil fuels completely, but the world began to realize that to achieve "eliminate totally" by years 2030 and 2050 may not be realizable. The approach was modified to keep using Natural Gas to a minimum and the targets of the Energy Transition was aligned to a Net Zero Era for 2030 and 2050. Realizing that from 2024 to 2030, we have only 6 years, and what is the overall objective of all countries of the world "is to change their energy supply infrastructures that took more than 100 years for many countries to a new drastically different form in relatively short time". This is a huge task. It is vital that the transformation takes place without negatively affecting the country's annual growth rates. This is what nations economists would help planners to maintain. This is quite demanding; the author is including his notes on various considerations based on his extensive experiences and his follow up of recent evolution of various issues/topics under the Net Zero Activities below. The list is not all inclusive/complete but is a

good starting point. The user needs to engage or consult with specialists as he/she needs in-depth information. The reader will find in Table 3 a list of the main candidate strategies being followed in search of set of suitable strategies for the time-scenarios to be selected and adjusted as needed for the country.

For a country, energy uses are primarily through the electrical systems (end users; residential. commercial and, industrial, trains), transport (onshore; vehicles, buses, trucks, aviation), and industrial plants that burn fossil fuels (heavy industries e.g. steel, cement, fertilizers, medium or light industries e.g. food industries). If one takes the electrical system, it generally took the country many years (could be more than hundred) to build and grow its infrastructure, now to cope with the targets of the Net Zero Era, the country has a much shorter time 2024-2030/2050 to substantially transform it, to different sets of operation regimes while adopting technologies that in many cases are still in early development and are not quite ready for large scale commercial use. This is amid the usual constraints on fundings. Handling these tough challenges while keeping competitiveness requirements for enterprises and the nation put a lot of pressures. The stake holders include governments, regulators, communities, off-takers, private investors, financing institutions, equipment suppliers, contractors, labor, others. Planning the path forward in each country under this background requires in-depth consideration of many interrelated /interacting aspects. Economists that are interested or would be involved in assessments, to support country's action plans would be called upon to make estimations for various scenarios and evaluate sensitivities to inputs.

Strategies

Table 3. *List of Main Candidate Strategies for Adoption in the Net Zero Era*

#	Target Sector(s)	Strategy	Notes
A	All sectors	Energy Savings	Encourage this low hanging fruit.
EG.1	Electrical Generation "E"	Retire immediately Coal & Oil Fired	Take action to stop using coal plants. Move to stop operation of oil fire plants.
EG.2	Electrical Generation "E"	Convert, if possible, to Natural Gas for finite time	Depending on the investment's costs convert Oil fired plants to natural gas.
EG.3	Electrical Generation "E"	Use Hydrogen "H2"- &Natural Gas mix with aim to go to 100% Hydrogen	Encourage the development of Fuel mix Natural Gas & H2 firing capability in Gas Turbines.
EG.4	Electrical Generation "E"	Expand Renewable Energy "RE" (Solar / Wind. Onshore & offshore / Hydro, other)	Encourage and facilitate; locating and licensing of RE plants.
EG.5	Electrical Generation "E"	Adopt Electric Storage Systems "EES'	Encourage EES and support effort to reduce their costs.
EG.6	Electrical Generation "E"	Use as much as possible curtailable power	Adjust PPAs to
EG.6	Electrical Generation "E"	Encourage RE generation at Consumers	Like rooftop applications
EG.7	Electrical Generation "E"	Deploy Nuclear Power Plants	Nuclear plants are not popular with the public for concerns about safety and long-term nuclear waste.
ET.1	Electrical Grid	Reinforce and expand Grid	High priority to minimize curtailment and insure robust and high quality.

ET.2	Electrical Grid	Modernize and introduce digitalization	Allow fine resolution monitoring
CC.1	Electrical "E" - Natural Gas Fired	Carbon Capture Storage and Use	Reduce costs and identify candidate cavern for storage.
CC.2	Heavy / Chemical Industries	Carbon Capture Storage and Use	
CC.3	for clusters	CO2 Storage & Transport	Build CO2 piping infrastructure
T.1.1	Transport Onshore	Electrical Vehicles & Charging Stations	Discourage use of Diesel and petrol fueled vehicles , possibly put time limit .
T.1.2		H2 Vehicles & filling stations.	
T.2	Transport Marine	LNG early later H2	Discourage Diesel and fuel, possibly put time limits .
T.3	Transport Aviation	Hydrogen Derivatives - SAF (Sustainable Aviation Fuel)	Discourage Jet fuel, possibly put time limit,
H.1	*To provide fuel to; EG.3, T1.2 and T.2*	Green Hydrogen Production	Need to connect to RE for electrical input. Need to overcome intermittent RE. Large scale plants need to be proven. Equipment cost need to improve. Electrical specific consumption "ESC" per kg of H2 need to be reduced. An invention that reduces the ESC by 50% would be a great news.

Considerations

1) Setting targets for frames 2030 and 2050. Because of complexities and uncertainties, the targets must be flexible yet achievable and subject to new alignments.
2) Establishing policies to support plans to reach the targets under 1 above.
3) Factoring international cooperation, including balancing imports versus security concerns.
4) Preparation of emergency plans for potential severe environmental occurrences.
5) Helping other courtiers particularly poor ones and those severely hurt/ affected from global warming.
6) Prompt and permanent shutdown of coal and oil in industrial and power plants, in the meantime include some flexibility for natural gas use in the short term to make up for the intermittent nature of solar and wind.
7) Energy conservation – this entails publicizing and introduction of incentives. This should encourage replacing old equipment and appliances by newer more efficient ones among all users including domestic users.
8) Encouragement of Electrical Storage Systems “ESS”. Required materials – e.g., Lithium.
9) Speedy adoption for Pricing of CO_2 emissions.
10) Participation of Private / Private Public.
11) Appropriate public funding expenditures among competing directions, support to manufacturers of new technologies, financial support to developers /investors, support to infrastructures enhancements and new ones, tax incentives for the users to alleviate higher prices.

12) Monitoring of the execution of adopted programs.
13) Boosting Knowledge / Technology. This should encompass all aspects that advances the capabilities of the workforce.
    Among the emerging thinking of locating new private plants that receive public funding/ subsidies in regions of less fortunate populations, the boosting of the knowledge level is far demanding.
14) Incentives for Innovations. This is very important to secure in-country-created technologies and knowhow. This will also foster capacity building when acquiring imported technologies.
15) Training / particularly new disciplines/traits/skills. This is vital to enable the workforce with regards to 13-14 above.
16) Project financing with uncertainties of new technologies. For financial institutions to take risks for large projects with 20 -25 years performance of technologies that are relatively new, requires engaging dependable independent technical advisors.
17) Standardization of Offtake agreements. Term acceptable to Off-taker depending on its products market.
18) Permitting/environmental approvals for Renewable Plants (Renewable Solar/Wind). Recognizing that these plants require large areas there should be enough thrust to weigh the environmental negatives versus the positives of these plants, Onshore/Offshore.
19) Electrical Systems reconfiguration and adoption of Digitization to cope with the large RE fluctuations and or resolve congestions – Funding.
20) Heavy Industries/Commercial Off-takers adoption of Carbon Capture (short medium term); reconfiguring existing plant for H2 – Costs.
21) Transport
    - Land – Penalize Diesel and Petrol vehicles to discourage continued (e.g. extra taxes on the fuel prices), removal of fuel subsidies or adding taxes must be over some time and in increments to avoid possible discontent among the public.
    - Support electric vehicles "EVs" in the short term and fuel cells and hydrogen engines in the midterm.
    - Charging stations for Electrical and filling stations for hydrogen.
    - Priorities for trucks, buses, cars depending on the local circumstances.
    - Facilitating locating charging stations and H2 filling stations
    - Offering tax credits for EVs and Green Hydrogen cars
    - Marine – Replace Oil engines by LNG and natural gas in the short term.
    - Aviation – CO_2 emissions at airports & SAF Sustainable Aviation Fuel for Planes.
22) Hydrogen

    Note that unlike fossil fuel Green Hydrogen starts from premium electrical energy which is used as input to the electrolyzers to produce an extra grade energy in H2 because it can be stored.

Two factors come to play to reduce the price of Green Hydrogen, i) use low-cost Renewable Energy, ii) find a solution for covering the electrical energy required to run the eelectrolyzers at high load (base load operation) when the RE is not available or at low level.

- Green Hydrogen Technologies (electrolyzers splitting water into Hydrogen & Oxygen) – Alkaline, PEM, proton exchange membrane (PEM), and solid oxide (SO) – the core of the electrolyzer plant is the stacks modules.
- Other equipment electrical and mechanical and control complete the plant, they add to the cost of the plant, and these also deserve improvements to reduce costs.
- Co-location/integration – (meaning locating together renewable park with electrolyzer plant close to the offtake location).
- Use of noble/scarce materials – cost.
- Supply chain concerns.
- Hydrogen Transport & Storage.
- Safety Concerns.
- Colored Hydrogen – in the short term.
- Hydrogen derivatives – e.g., SAF (Safe Aviation Fuel).
- Incentives/Tax credit for Green Hydrogen.

23) Carbon Capture Technologies (Storage/Use)
    - Carbon Capture technologies (precombustion / post combustion – Open capture)
    - Supply chain concerns
    - Corridors and hubs for CO_2
    - Incentives /Tax credits for Carbon Capture.
24) Consider grants to assist manufacturers for Hydrogen and Carbon capture to innovate and reduce costs.
25) Dependence on importation of Natural Gas/LNG in the short term, RE in the medium term and long term and or Colored Hydrogen, Green Hydrogen, and its derivatives in the long term. Balancing security, infrastructure e.g., ports and transport storage facilities versus the low importation price.
26) Dealing with the certificates of CO_2 avoidance based on the imports under 25) above.

Part V: Conclusions

The paper contents underline the interdependence of the national economies to knowledge resources and the energy supplies. The technology role in the various sectors of the economy as well as the energy role are vital, the importance of innovations is underlined.

For Academia's professionals and researchers many topics for new research have been identified from the closeness of the Macro-Economics/Thermodynamics. Dealing with knowledge measurement in Joules could open a wide area for research that may lead significant results. The author invites economists that would like to

collaborate with him in further investigations on related to Part I and/or II to get in touch with him.

Part IV is meant to summarize a list of considerations in dealing with the Energy Transition that entails fast changing and interdependent factors which require balancing risks and rewards among stake holders for long term commitments 20- 25 years. This is amid dealing with applying technologies that need significant funding for further development to gain reliable performance for the large-scale plants at desired price levels to meet 2030 and 2050 ambitious targets for Net Zero.

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