



Athens Journal of Business & Economics



*Quarterly Academic Periodical,
Volume 8, Issue 3, October 2022
URL: <https://www.athensjournals.gr/ajbe>
Email: journals@atiner.gr
e-ISSN: 2241-794X DOI: 10.30958/ajbe*

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Athens Journal of Business & Economics

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The Athens Journal of Business & Economics

ISSN NUMBER: 2241-794X- DOI: 10.30958/ajbe

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The current issue is the fourth of the eighth volume of the *Athens Journal of Business & Economics (AJBE)*, published by the [Business & Law Division](#) and the [Economics Unit](#) of ATINER.

Gregory T. Papanikos
President
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- Abstract Submission: **28 November 2022**
- Acceptance of Abstract: 4 Weeks after Submission
- Submission of Paper: **29 May 2023**

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Strategic Foresight and Innovation Management: A Comparative Study across International Swiss Banks

By Stefanie Baumgartner^{*} & Marc K Peter[±]

International Swiss banks are challenged more than ever. The fast-paced global environment forces them to develop new and innovative products, services, and processes to sustain in the long-term. Therefore, strategic foresight is important to understand the organisations' customers, their evolving needs and changing behaviour, and in turn provides banks with the necessary analysis and knowledge about future customer needs, enabling them to take the right decisions to be prepared for future change. This paper investigates how the incorporation of strategic foresight in international Swiss banks is executed to enhance their innovation activity. Through an in-depth analysis of academic papers and three case studies based on twelve qualitative interviews with management representatives from the financial services industry, a new framework was developed. The framework of "enhanced innovation activity through collaborative foresight activities" is designed as an iterative process consisting of internal and external dimensions. Innovation activity can be enhanced while focusing on setting the right parameters throughout the organisation. The strategic foresight process enables practitioners in collecting the right information about future trends and customer needs, which supports innovative thinking and human involvement. Applying the framework reinforces banks in focusing on the decisive dimensions of the strategic foresight process and enhances innovation activity.

Keywords: *strategic foresight, innovation management, enhanced innovation activity framework, foresight research, Swiss banks*

Introduction

According to a survey of 100 Swiss banks (Ernst & Young 2018), banks are short-sighted and detect trends only when real and imminent. Long-term trends are not recognised, neither as threats nor as opportunities. This indicates a weak strategic foresight process of organisations in the financial services industry. Therefore, further research is required regarding how to best incorporate this management task into the bank's processes and transform its inputs into a competitive advantage. According to the report, as the number of banks will decrease in the coming years, the pressure to be competitive further increases (Peter 2019). The changing environment requires a deep understanding of the driving forces and therefore encourages organisations to more actively consider

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both threats and opportunities from the emerging future. In turn, this necessitates foresight activities within the organisation (Joneidi Jafari and NiliPourTabataba'i 2017). Unfortunately, many organisations are unable to transform the generated knowledge and information from foresight activities to produce innovative products and services (Shin 2017). Here, foresight methods can increase the innovation activity of an organisation, serving as a strategist, an initiator, or an opponent. It aims to provide strategic direction, considering various opinions and information about competitors' moves. It facilitates the organisation to detect new customer needs, new technologies, and/or changes in the environment. To date, strategic foresight is still not integrated as a standard process in many firms' strategy development processes and the knowledge of its positive output is not yet accepted widely. According to a survey executed with industrial firms (Battistella 2014), only 2.4% of survey participants responded that they systematically use foresight activities to generate insights into possible future scenarios which are later used for managerial decision-making and actions. This indicates that the benefits of foresight are not understood, and more research must be undertaken and practical contributions generated to motivate and support companies to integrate strategic foresight methods in their strategy development process. Overall, more knowledge is required about how the cooperation of strategic foresight and innovation management can be handled most efficiently.

The research objective of this paper is to investigate the process of strategic foresight and its impact on the innovation activity of international Swiss banks. An additional objective is to identify how to incorporate strategic foresight into an organisation in order to be able to generate the highest possible activity in innovation, creating competitive advantages.

Literature Review

The Financial Services Industry in Switzerland

The financial services industry in Switzerland has decreased its contribution to the national gross domestic product (GDP) within the last decade (Schweizerische Eidgenossenschaft 2019). In 2018, its contribution was 9.1% (CHF 60 billion, of which CHF 31 billion resulted from the banking industry, the rest from the insurance industry) compared to 11.1% in 2008. A meaningful structural change has been noticed in the number of major banks as their number has doubled (mainly resulting from various mergers), the number of private banks and individual bankers shrunk by 50%, and 30% of foreign-dominated banks vanished from the market (Schweizerische Eidgenossenschaft 2019).

As digitisation progresses, competition has increased. Small start-up financial services providers enter the market and large technology companies are expanding their product and service offerings into the financial services industry (BBVA 2019). Smartphone banks, such as Neon, Revolut, Transferwise or Zak have attractive services for lower cost than traditional banks. They are highly competitive in currency exchange and usually have a customer-friendly user interface, which

many other banks do not yet have (Handelszeitung 2019). According to a study by the Swiss National Bank, banks expect so-called BigTechs – companies such as Amazon, Google or Facebook – to enter the financial industry, where they may have a competitive advantage over incumbent banks as they have vast amounts of customer data and sophisticated technology readily available (Moneycab 2019). Banks know that changes in strategy and product portfolios will be required, but it is not obvious in which direction they must develop strategically as they cannot yet recognise the direct impacts. This underlines the importance of corporate foresight and innovation management.

Digitalisation has driven a first wave of structural transformation in the financial services industry. On one hand, banks expect less drastic structural change than in previous years (Ernst & Young 2018); but on the other hand, the importance of the notion that digitalisation will revolutionise processes and business model has increased. According to their survey, banks have recognised the importance of digitalisation and have started to create think tanks, which enable the examination of trends and innovation opportunities. Artificial intelligence (AI) is already a particularly important tool in the financial services industry. It can be leveraged to provide investment advice, product comparisons, or to more efficiently interact with clients (Newman 2019). Additionally, the usage of big data has become indispensable (Ravi and Kamaruddin 2017). As technology, robotic automation and AI are some of many trends influencing the global financial services industry (Mehrotra 2019). Additionally, because of ongoing new innovations in this space, they make it difficult for organisations to plan for the medium to long-term.

Strategy, Strategic Foresight and Innovation

According to Barad (2018) and Hambrick and Fredrickson (2005), strategy consists of a set of choices which guide the business on how to achieve objectives. The mission and vision are crucial supportive elements to a business strategy; however, they are not part of the strategy itself (Watkins 2007). Similarly, the external environment of an organisation is not part of the strategy but provides the organisation with important information on how to position itself in the competitive market environment. In addition, internal processes and structures are also not part of the strategy. However, they identify the core elements of strategic analysis as industry analysis, customer or marketplace trends, environmental forecasts, competitor analysis, assessment of internal strengths, weaknesses, and resources. Strategy therefore is defined as “the central integrated, externally orientated concept of how we will achieve our objectives” (Hambrick and Fredrickson 2005, p. 52).

According to Nelson (2015), less than 1% of organisations developed capabilities for strategic foresight. In a study where 300 global executives were asked about strategic foresight, 97% of the respondents commented that their organisation lacked an early warning system for discontinuities and that they, therefore, had been surprised by competitors’ moves in the past (Schoemaker et al. 2012). The basic assumption that an organisation can rely on a stable environment

and a foreseeable future has changed. Strategic foresight has thus emerged from the need for an answer to the instability in the context of organisations (Nelson 2015) and defeating competitors while achieving a competitive advantage (Gholipoor and Mehdi Mozaffari 2020). With strategic foresight, organisations can mitigate risk and capture possible business opportunities (Pulsiri and Vatananan-Thesenvitz 2021). Originally, strategic foresight started with a strong focus on technological issues (Do Couto e Silva et al. 2016), followed by discussions on new business models, new markets, and new competitors (Shah et al. 2013). Schoemaker et al. (2012), Calof et al. (2018), and Georghiou (2001) have recognised that the social component has been missing from early research in corporate foresight, but plays a vital role in the process.

Iden et al. (2017) define strategic foresight as a concept, while other authors describe strategic foresight as a process (Gaspar 2015, Keller et al. 2014; Vishnevskiy et al. 2014). Strategic foresight uses data indicating a potential future outcome to enable “understanding and acting upon information more quickly and creatively than competitors” (Hines 2006, p. 18). Through the analysis of environmental discontinuities and changes on an ongoing basis, organisations try to establish effective responses (Rohrbeck 2011, Rohrbeck and Schwarz 2013). According to Emelo (2011) and Nelson (2015), foresight activities aim to define these responses in the present while directing the unforeseeable future. Therefore, the context of an organisation’s environment is critical in defining the current undertakings. Its emerging character needs close surveillance (Nelson 2015). Slaughter (1999) defined strategic foresight as the coherent maintenance of the future-orientated vision of high quality, using indications for future changes. Through understanding possible future scenarios, strategic foresight also helps in efficiently allocating organisational resources for planned strategic actions (Pulsiri and Vatananan-Thesenvitz 2021). Both Gracht and Stillings (2013) and Rohrbeck and Schwarz (2013) have additionally identified the importance of recognising customers’ needs. According to these authors, strategic foresight should deliver solutions to future customer needs. As a competitive advantage can disappear rapidly, it is essential for organisations to focus on innovation management to be able to anticipate future customer needs and retain the competitive advantage (Duin and Graaf 2010).

As such, strategic foresight is part of the strategic planning process, as the organisation's strategy depends inevitably on the vision which is defined based on the knowledge gained from strategic foresight (Coelho et al. 2012). While setting the vision of an organisation, it is important to consider the organisation’s mission, performance, and effectiveness (Hines 2006). The focus lies on the interconnection between the future and the organisation. Creating a common vision for the company is a key element of the strategic foresight process (Bezold 2001, Daheim and Urz 2008, Duin and Graaf 2010, Vishnevskiy et al. 2014).

Rohrbeck et al. (2007) define technology intelligence, political environment foresight, competitive intelligence, and consumer foresight as the main elements of strategic foresight. People, organisation, networks, culture, and information usage are further dimensions defined by various other authors (Hansen et al. 2015, Joneidi Jafari and NiliPourTabataba'i 2017, Ryu and Lee 2016). According to

Hammoud and Nash (2014), there are thirty-three well-known foresight methods which help to identify discontinuities of these influential factors. Durst et al. (2014) mention thirty-nine methods applicable for the foresight process. However, the most common ones are scenario planning, trend analysis, environmental scanning, workshops, and weak signal analysis (Hammoud and Nash 2014). Weak signals are being identified, collected, and measured with the help of the strategic foresight process (Rohrbeck et al. 2007). Many authors underline the importance of the general involvement of management in any foresight process: their commitment and responsibility to investment in strategic foresight on the one hand, and on the other hand their participation in accordance with their capacity (Jarratt and Stiles 2010, Peter and Jarratt 2015, Rohrbeck 2011, Westley 1990). Highlighting the importance of involving stakeholders, such as employees, partners, customers, or any other actors in the close environment of the organisation, has been recognised by various authors (Berkhout and Hertin 2002, Duin and Graaf 2010, Hansen et al. 2015). Finally, for analysing, evaluating and assessing the importance of future trends, expert interviews help to identify the core driving forces (Abadie et al. 2010, Hansen et al. 2015, Holopainen and Toivonen 2011, Sarpong and Meissner 2018).

As strategic foresight is an ongoing process, environmental analysis, scanning, and monitoring tasks must be executed periodically. Andersen et al. (2014) also mention that learning and monitoring are often neglected, although it is important to be able to learn from the advantages and knowledge of strategic foresight. Moreover, within the strategic foresight process, one can identify the need for the supporting characteristic of the organisational structure as well as the importance of the external environment, which delivers indicators of discontinuities. As strategic foresight is mainly considered part of strategy development, the management team of the organisation must be included in the process. It is the top management's role to make strategic decisions, but every employee should be able to deliver input from the perspective of the operational daily business.

Innovation

Georghiou and Harper (2011) elaborate that innovation cannot only be directed by the company itself, but rather it is an interaction between the company, universities, technological institutes, consulting companies, suppliers, and competitors. In addition to technological and scientific components, innovation also includes the ability to integrate other supportive departments of the company. According to Andersen and Andersen (2014), innovation system foresight is defined as “systemic, systematic, participatory, future-intelligence-gathering and medium-to-long-term vision-building process aimed at present-day decisions and mobilising joint actions to improve innovation system performance with the ultimate goal of improving desirable socio-economic performance” (p. 281). Innovation system foresight includes the innovation in technology, science, and socio-cultural aspects, and aims to look at innovation and foresight to include contextual information.

In order to enhance innovation activity and increase innovative output, it is paramount to closely monitor the environment of an organisation. It is easy to

identify major trends, but following the obvious direction of the primary trends is insufficient for innovation. Therefore, innovation is closely linked to strategic foresight, which has the capabilities to deliver the input factors due to its environmental scanning and monitoring and through the identification of weak signals. Another component of innovation management is the close involvement of stakeholders of the involved organisations. Therefore, innovation activity can be executed best if it leverages input from the foresight process.

1

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3 Research Methodology

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5 Research Approach

The research for this paper follows a predominantly deductive approach. A deductive research approach is executed in a logical sequence starting with a research focus, followed by a literature review, the definition of the research design, empirical data collection, data analysis and concluding with the findings and the evaluation thereof (Yin 2014). Literature on the topics of strategic foresight, strategic management and innovation are readily available. This body of literature forms a foundation to establish a framework which explains the most important dimensions of the strategic foresight process, enabling increased innovation activity. It serves as the basis for empirical data collection. The framework finally has been adjusted and validated according to the knowledge gained from the empirical data collection in order to be valid and beneficial in a business context.

Research Design

For the research, a multiple case study design has been chosen. According to Yin (2014), case study design enables understanding of phenomena in complex, real-world environments. Greene and David (2002) and Yin (2014) all argue that multiple case studies provide greater confidence in the outcome. The selected cases follow a literal replication logic, meaning that a similar outcome is expected for the different cases. The research design for this paper is led by a qualitative approach. The qualitative research methods are applied to answer the research question of *How does the incorporation of strategic foresight influence the innovation activity of international Swiss banks?*

For this paper, a multi-case study with the same context is therefore most suitable. Context is provided through the research question and investigates the incorporation of strategic foresight and its influence on innovation activity. The three selected cases represent different international Swiss banks. A total of twelve interviews with experts have been conducted (four with each bank). A single type of embedded units of analysis is used, where the subunits of analysis and the embedded units of analysis are extracted from the framework evolved from the literature review and represent the dimensions of the said framework. They indicate an embedded multiple case study design (Yin 2014).

Data Collection

Data collection follows a deductive research approach. Therefore, a literature review was conducted following the definition of the research objectives (Yin 2014). For the research, secondary data was collected following the literature review. Analysis of the literature was necessary to identify certain tendencies. To identify the tendencies of the individual dimensions of the strategic foresight process, data was collected in a systematic and evolving manner. Data was mainly extracted from researchers on the topics of strategic foresight, strategic management, and innovation. Keywords such as strategic management, strategy, strategic foresight, foresight, and innovation were previously defined. Further data was collected evolving from the bibliography of the authors and the documents of the systematic research (a total of fifty papers were reviewed). For the data collection for the literature analysis and the establishment of a draft framework, only peer-reviewed papers were selected. For other parts of the research, such as the introduction and the overview of the financial services industry, other data was also used. Data collection was mainly executed on online platforms such as EBSCOhost, Springerlink, ProQuest, EconLIT and Emerald. All relevant papers were added to a new project in Atlas Ti8 for coding and to keep track of the individual papers and notes.

Primary data for this paper was collected through twelve semi-structured interviews in three case organisations (Table 1). Semi-structured interviews are most suitable for this type of research, as they allow flexibility and provide the interviewer with the possibility to react to specific answers and request further explanations. Additionally, it allows for a more personal approach. Interview participants were given an illustration of the framework developed from the literature review and were invited to explain how each dimension is dealt with in their specific organisation and department, and to rate the importance of each individual dimension.

For this research, the corporate headquarters of the selected international banks had to be in Switzerland and their operations to be internationally focused. Case selection was designed to achieve a broad base of bank types. They include a dominant Swiss bank (a large global player, Case A), a smaller and younger Swiss international bank (Case B), and a medium sized, long established and traditional Swiss international bank (Case C). As the organisation's monitoring of the environment often takes place within the strategic management department or the innovation management team (Daheim and Urz 2008), interviewees were chosen mainly from the foresight, innovation, or strategy departments.

Table 1. Case Organisations, Interview Participant Roles and Interview Dates

Case Organisation	Interview Participant Role	Interview Date
A: Dominant Swiss bank (a large global player)	Digital Strategist	27.02.2020
	Head of Innovation	27.01.2020
	Future Archaeologist	21.02.2020
	Future Archaeologist	21.02.2020
B: Smaller and younger Swiss international bank	Head Artificial Intelligence & Data	28.02.2020
	COO Wealth Management	06.03.2020
	Head of Core Platforms	11.03.2020
	Business Engineer	28.02.2020
C: Medium sized, traditional Swiss bank	Head of Platforms & Strategic Projects for Investment Management Solutions	17.03.2020
	Head Channels & Innovation	02.03.2020
	Programme Manager Digital Advisory	17.02.2020
	Coordinator of Networks (FinTech Start-ups)	03.03.2020

Data Analysis

The individual cases were analysed based on the within-case analytical technique known as pattern matching. According to Yin (2014), pattern matching aims to compare the patterns based on the literature review with the outcome of empirical patterns. Following the within-case analysis, all three cases were further analysed and compared. Based on working propositions, the individual patterns of the cases generated cross-case patterns. Since replication logic indicates similar outcomes from different cases, this was further discussed in data analysis. Yin (2014) outlines the importance of four quality criteria to ensure quality of research, including construct validity, internal validity, external validity, and reliability, all of which were considered and fulfilled as part of this research project.

Results

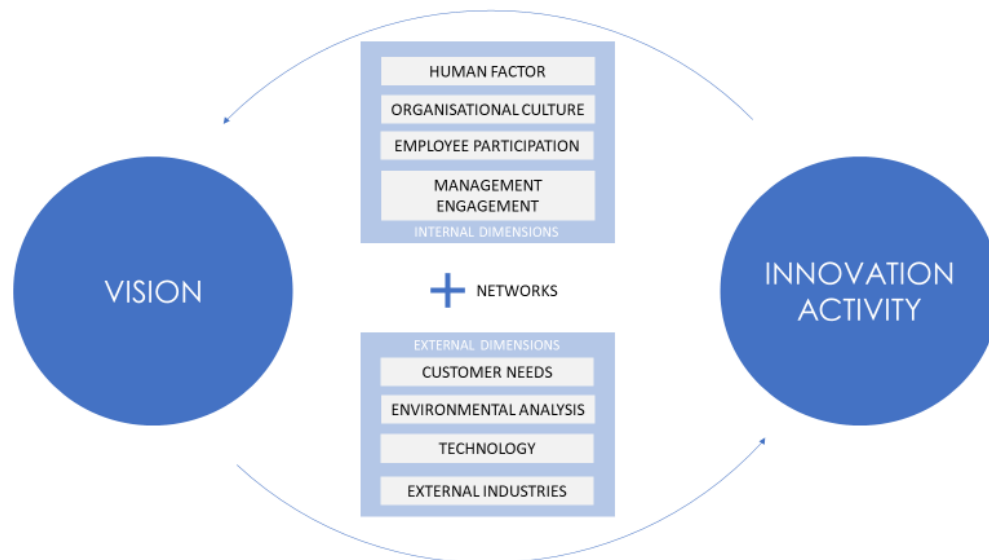
The findings from interviews provided empirical insights to adjust and enrich the framework of “enhanced innovation activity through collaborative foresight” (Figure 1) which originally derived from the literature review. The field study helped in identifying the main dimensions of foresight in the financial services industry, especially for international Swiss banks.

According to the research participants, vision is by far the most important dimension. The vision should be the starting point of both the framework and the strategic foresight process. The vision provides input regarding what aspects of the environment shall be considered (being aware of potential existing paradigms which cloud the scope), how to organise the internal foresight structure and about the focus within an organisation. Ultimately, the vision is adapted and adjusted through inputs resulting from innovation activity. Therefore, it is an iterative

process, where the vision is the starting point but is also shaped through the innovation activity and the other dimensions themselves in the strategic foresight process. Therefore, the vision must be open for revalidation and adjustments and should not be a rigid component in the framework.

Another particularly important dimension mentioned by the research participants is the focus on the customer itself. In the framework based on the literature, the customer was a sub-component of environmental analysis. However, as the research participants set a particularly strong focus on the customer (and his/her changing needs and behaviours), it is necessary to take them as a separate dimension in the framework. Current and future customer needs are decisive in identifying how to keep the business running and how to steer the operational activities and strategic decisions. The framework should also include external industries, a component which has not been identified in the literature review, but which can provide different and interesting approaches on how to tackle customer needs and evolve the business. Additionally, these industries can provide input and ideas on how to combine different needs from customers and offer the best possible customer experience.

Figure 1. *Validated Framework on Enhanced Innovation Activity through Collaborative Foresight*



Source: own illustration.

Enhanced Innovation Activity through Collaborative Foresight

As outlined above, the vision in the validated framework has been adjusted and now depicts the starting point of an iterative strategic foresight process. Additionally, two additional components were added to the external dimensions, namely 1) customer needs and 2) external industries. The order of the two dimensions was adapted as well: internal dimensions are placed at the top because they were rated as most important. Additionally, the sequence of the dimensions within the two groups was changed according to their importance rated by

research participants. Additionally, management engagement or capability was shortened to management engagement, as the research identified that engagement is more important than capability.

Vision

The vision of an organisation is a key success factor for a clear direction towards the future. A vision must be set at the start of every foresight process, but it must remain adaptive and responsive. The findings from the environment and the internal set-up of an organisation should provide input for the vision. Strategic foresight helps to identify these inputs, which are decisive for the vision. Therefore, the strategic foresight process is perpetual and thus might modify a vision according to strategic decisions taken as a result of the process.

Human Factor (Internal Dimension)

Inputs from employees, customers and other stakeholders are particularly important in creating an innovative environment. They should be integrated into the process at the beginning of the foresight activities. Through the cooperation of people and the thereby increased knowledge base, innovation activity can be enhanced. Additionally, mobilisation and development of the human factor should be increased, but this must be in a structured and organised way. Otherwise, people are tempted to provide input without direct relevance to future improvements of business models, products, services, or processes.

Organisational Culture (Internal Dimension)

The organisational culture sets a value framework for communication, and it is critical for a supportive atmosphere. Organisational culture enables innovation activities but can also hinder them. In the traditional setting in the Swiss financial services industry, a culture which accepts failure from taking risks is not yet in place. For a smoother process in strategic foresight and to increase innovation activity, the organisational culture of the banks must be more flexible and open. It is important to equip employees with responsibilities and ownership. Additionally, employees should feel encouraged and supported to develop new ideas or proposals for improvements.

Employee Participation (Internal Dimension)

In the process of strategic foresight, to ultimately increase innovation output, it is important for individuals to be engaged. Employees must be committed to ideas and improvements through close collaboration and interaction, independent of the hierarchical level. Skilled employees have an effective performance and a higher efficiency. It is more important for the short-term planning horizon to include employees' skills and inputs rather than for the long-term. Most important are the inputs from customer-facing employees when it comes to ideas and improvements. According to the interviewees, it is important that employees mainly focus on their field of responsibility and provide inputs in this area.

Management Engagement (Internal Dimension)

For ideas and projects to result in actual changes and performance improvements, management must be involved. This is mainly regarding the decision-making process, where management must actively steer the direction of the organisation. With a supportive and determined process, clear communication, and a flexible approach to fund new projects, management actively participates in the foresight and innovation process. Management fosters and supports the employees in engaging and in further developing the bank as a competitive player in the market environment. Organisations with a strongly engaged management team have a higher success rate in innovation management.

Customer Needs (External Dimension)

Future customer needs and behaviours are one of the most important factors in the strategic foresight process. They are part of the environmental analysis, but as they are a key success factor in defining the future strategic direction of a company and its investment in innovation activity, there should be a clear focus on the customer. An organisation must understand both current customer needs and they must be able to anticipate what they might look like in the future; and must be aware of changing customer behaviour. Only with this knowledge can the organisation provide the most suitable business models, products, services, and customer experiences.

Environmental Analysis (External Dimension)

The environment of an organisation must be closely observed to detect changes in trends; and competitors within the industry must be closely monitored. Additionally, the exchange with suppliers and manufacturers is crucial to understand where the market is heading towards from a strategic viewpoint. They might provide the organisation with additional trends and market deviations, which could be important to develop new business models, processes, services, or products. Organisations must be aware of trends occurring within and outside the industry.

Technology (External Dimension)

Technology is either used as an application in the foresight process or as an important driver for innovation. It can support data collection and analysis, but usually it is not used in this regard. Technology in this context is especially important as a driver for innovation as there are many changes and developments in the technological field. Thus, technology is seen as a major innovation driver and enabler.

External Industries (External Dimension)

To be able to best tackle customer needs and changes in customer behaviour, it is of high value to understand how organisations in external industries are coping with the same or similar topics/notions. Many organisations are trying to establish a system which provides customers with an end-to-end value chain to create loyalty by binding them to the organisation and providing them with the best

customer experience. Organisations should not only focus on their core business and existing industry standards, but also on how to provide customers with the smoothest and best experience by benchmarking their strategies to external industries best practice.

Networks (External Dimension)

Networks provide a solid source for new information and to broaden the knowledge base of an organisation. Networks increase the diversity of inputs. However, organisations perceive it as difficult to obtain information that was not previously known. Additionally, collaboration with the network should focus on the enrichment of foresight inputs and involving an outside perspective, which helps in broadening the scope of information. Organisations and networks overall should be more open and transparent in sharing information and knowledge about trends or weak signals. Collaboration with universities, strategy partners, research organisations, scientists, and others should be increased. However, such collaboration is seen as complementary to the other dimensions of the foresight process.

Innovation Activity

Innovation activity is mainly increased by strategic foresight through three pillars: 1) the creation of new business fields, 2) the augmentation of the number of innovative and newly developed concepts, and 3) the assurance of the quality of the innovation. Government regulations influence innovation activity within a country and within the different industries to a significant degree. In addition, cultural values can enable or hinder the innovation activity of an organisation. Swiss values such as trust, safety, and security are rather seen as barriers. The innovation activity is strongly influenced by the strategic foresight process of an organisation. A main enhancer of innovation is to consider the bottom-up approach, where the input is provided by individual employees, customers, or stakeholders, each directly affected by the business model, process, product, or service.

Discussion

This chapter focuses on the research question of *How does the incorporation of strategic foresight influence the innovation activity of international Swiss banks?*

While Nelson (2015) states that by 2010, less than 1% of organisations developed the capability and structured approaches for implementing strategic foresight, field research confirmed that some organisations and many employees still lack familiarity with the topic. Field research also confirmed that from the three examined international Swiss banks, only two have a structured process for strategic foresight. One of them has completely outsourced the process and decoupled it from the internal structure, while the other bank has integrated foresight in a broader transformation and innovation division. However, strategic foresight was not specifically part of the strategy development or adjustment circle in any of the examined organisations. According to Nelson (2015) and Amniattalab

and Ansari (2016), strategic foresight is mainly used for combating the instability in the context of an organisation, to be able to secure a competitive advantage in the changing and dynamic market, and to be able to survive in the long-term. Dominiece-Diasa and Volkova (2019) argue that strategic foresight is an instrument for managing innovation within an organisation and its environment. As the planning horizon of strategic foresight is generally long-term, a huge difference between the academic suggestions and within the business context was identified. Ernst & Young (2018) mentioned in their report that for banks, it is not possible to plan far in advance given their environment. Changes in digitalisation and customer needs are fast paced and force the banking sector to take short-term and even immediate actions. Research participants confirmed that it is very difficult in such an environment to look beyond five years in strategic planning. Banks, it seems, are required to plan, and think medium-term with a two-to-five-year strategy horizon. For some events or shifts in the close market environment, it is necessary to act within an even shorter period.

Do Couto e Silva et al. (2016) mention that in strategic foresight, a strong focus lies on technological issues. It is important to differentiate here between technology as a tool to detect and track changes in trends and technology and as a change factor itself. Field research confirmed that technology in foresight is only important if it drives disruption and changes in the market. The role as a disruptor is confirmed in the literature (Farrington et al. 2012, Ruff 2014, Sarpong and Meissner 2018). A case study by Costanzo (2004) confirmed that technology can be a major factor in strategic foresight in the banking industry, mainly if the organisation aims to compete within the stage of early adopters. Research participants mention that technology tools are not useful for the foresight process itself; they use unsophisticated and easily handled tools to track information and changes gathered from the analyses (such as spreadsheet tools). Technology enables many innovations, and as it is fast paced and allows new ways of optimising long-standing processes and services in a more efficient way, it is one of the key factors in innovation management.

Competitors and potential new markets are identified as especially important in foresight planning by Calof et al. (2018), Schoemaker et al. (2012), and Shah et al. (2013). Survey participants also claim the importance to include external industries. To obtain a fresh perspective, it can be beneficial and insightful to analyse how external industries tackle emerging customer needs. Some participants mentioned that collaborating with competitors as a part of the extended network, exchanging current trends or topics in the market might be beneficial to finding new solutions to market challenges.

The human factor, as well as employee participation, are confirmed to be very important in enabling an innovative environment. Georghiou (2001) mentions that social components are a key success factor in an effective foresight process. Also, Dominiece-Diasa and Volkova (2019) confirm that strategic foresight is evolved and retained by managers and employees. Research participants confirmed that customer needs must be included as a separate dimension in the framework. According to the field research, it is paramount to identify current and future customer needs in order to be able to anticipate future strategic directions. The

clear focus on customer needs is also identified by Gracht and Stillings (2013) as well as Rohrbeck and Schwarz (2013). They regard the main purpose of strategic foresight to be recognising these needs and delivering a solid customer experience.

Literature does not often define the vision as the starting point of the strategic foresight process, but rather as one of the final steps before formulating strategy (Iden et al. 2017, Schoemaker et al. 2012, Vishnevskiy et al. 2014). This, however, was not confirmed by the research participants. Instead, they consider the vision as the starting point of the foresight process and therefore, the core factor which provides the direction in which to steer the external analysis. Every other dimension and analysis thereof will be adjusted to fit this vision. A vision should have a very clear direction, which allows adaptations of the organisation in the environment. Also, interview partners state that it is not possible to develop innovative products and services if the vision has been built based on the current environment and based on the internal structure and internal constraints. Furthermore, it is usually the management team which is responsible for formulating the vision, before analysing the environment. The vision does not enhance the innovation activity directly, but rather shapes the activities that the organisation undertakes to increase innovation management. The research participants mentioned that at present, the vision of international Swiss banks is mainly focused on the “now” rather than towards the future. This is also a reason why the research participants stated that the vision should be adaptive and part of the dynamic strategic foresight process. Additionally, the vision provides input on how to set up the organisational structure to be most efficient in attaining the goals. Both the literature and the field study revealed the vision to be highly important, but at different points in the process. It was identified as a key element in the strategic foresight process by e.g., Bezold (2001), Daheim and Urz (2008), Duin and Graaf (2010), and Vishnevskiy et al. (2014).

Georgiou and Harper (2011) consider interaction and collaboration with external networks to be important. This view is supported by the research participants. They mention the importance of collaboration with networks such as universities, technological institutes, suppliers, and competitors to increase the inputs for an overall enhanced innovation activity.

Field research showed that strategic foresight is not yet executed in a structured process in many companies, which was also identified in the literature research. The field study also identified that there is no need for a rigid structure in the foresight process. Moreover, when there is no established strategic foresight process, it does not mean that the organisation is not actively working on innovation or market trends. However, research showed that it is important to include the dimensions covered in the framework. The vision, followed by the internal (human factor, organisational culture, employee participation and management engagement) and external dimensions (customer needs, environmental analysis, technology, external industries, and networks), lead to enhanced innovation activity. These dimensions must be taken into consideration in a holistic foresight process that provides input to innovation management. Research indicates the importance of the bottom-up approach regarding detecting environmental trends or customer needs through human factor and employee

participation. This also suggests that the strategic foresight process is iterative and can start from any of the dimensions in the framework. The vision influences the other dimensions and as the framework depicts a dynamic workflow, the vision provides the direction but is also adaptive and responsive.

Research participants confirm that the dimensions of the framework of “enhanced innovation activity through collaborative foresight” are especially important in enabling an innovative atmosphere and enhancing innovation activity within an organisation. However, they do not confirm the importance of a clear and rigid structure that shall be followed. The differences between the processes of the different banks also support this notion. As identified in the literature review, the increasing competition in the Swiss financial services industry forces banks to undertake actions and to think ahead. Most of the concerns of banks have shifted from compliance and regulation-based issues resulting from the financial crisis to those surrounding digitalisation and its impact (PricewaterhouseCoopers 2016). The competitive environment increases the need for a better understanding of which dimensions and components could help identify the inputs for an organisation’s strategy and for innovation management. The literature review demonstrates that strategic foresight should be integrated into strategic management. However, field research demonstrates that strategic foresight is not integrated in strategic management at all. The research participants explained that there is some degree of collaboration and linking; but not to the degree as suggested by the literature. One reason is that the analysed organisations do not have fully dedicated strategic foresight teams or processes in place. Instead, strategic foresight is delegated to divisions such as innovation management or transformation. According to Dominiece-Diasa and Volkova (2019) and Rohrbeck and Gemünden (2008), there is a lack of understanding of the effectiveness of strategic foresight on innovation management. This is also supported by the field research, as many of the participants could not clearly define where and whether strategic foresight or any parts of it are truly embedded in the organisation.

Field research also identified some differences between countries. The examined banks are all Swiss but with a focus on international markets. They all have branches all over the globe. In the strategic foresight process, they try to consider foreign markets in general. As the focus in a business context is short-term orientated, the banks consider local trends and customer needs first. A reason for this is that customer needs differ greatly across the globe due to numerous factors which influence customer behaviour. Political stability, regulations, and for instance investment of governments into start-ups, and general technological advances all influence customer needs. Therefore, it is important in a medium-term planning horizon of up to five years to observe local trends and market deviations in the close environment where organisations face similar customer behaviour and needs. However, as the field research shows, two out of three banks also consider global trends and movements in the market. As their client base is international, banks observe global changes and shifts. Additionally, research participants mentioned that they learn from other markets, countries, and cultures, and in the long-term. This can therefore foster their innovation activity in business models, products, and services.

Conclusion

This paper aimed to close the research gap regarding the interconnectedness of strategic foresight and innovation management, specifically in international Swiss banks. The aim was to develop a validated framework which guides practitioners in creating a successful strategic foresight process that results in enhanced innovation activity. The framework was established based on the analysis of fifty academic papers and was then validated through empirical field research with three international Swiss banks.

The framework was adapted after the field research and adjusted to the specific needs and prerequisites of banks. The framework of “enhanced innovation activity through collaborative foresight” presents an iterative process. The process ideally starts with the vision as the leading component according to the overarching organisation’s goals. The framework includes internal dimensions such as the human factor, organisational culture, employee participation and management engagement, which form the internal setting of an organisation focusing on the strategic foresight process to increase its innovation output. The framework also includes external dimensions such as customer needs, the environmental analysis, technology, and external industries. Additionally, networks are included as an external collaboration input. All dimensions must be closely monitored and actively considered in order to be able to take strategic decisions based on the anticipation of future developments of market components.

The findings from the field research confirm the literal replication logic as similar results are found across the three different banks. However, the set-up of the strategic foresight process differs in each bank, as one has it completely decoupled from the internal structure, another does not have any specific department or division that manages the foresight process, and the third delegates the topic to its transformation and innovation division.

Empirical research showed that the topic of strategic foresight is not yet per default embraced and the process is not executed in a structured manner across the financial services industry. This was confirmed by the interviewees as they did not have the same information level on the implementation of the strategic foresight process or its individual dimensions.

As competition increases from international, less rigid, and technology orientated and advanced organisations, banks are forced to address the changing customer needs and behaviours to stay competitive and to survive in the long-term. The planning horizon of the strategic foresight process must be adapted to the more practical and business-orientated application of a medium-term focussed strategy planning cycle of up to 5 years. This provides inputs regarding new business models, products, services, and processes in order to foster innovation.

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Formal Rationality as Ideal: The Textbook Approach to Management

By Karin Brunsson*

Two approaches to rationality characterize the understanding of management accounting and control: one descriptive, based on empirical research and allowing for a variety of versions of rationality; the other normative, explained to undergraduate students through voluminous textbooks on management accounting and control and based predominantly on the idea of formal rationality. Whereas the descriptive approach is often presented as a contrast to the normative approach, the normative approach seems largely independent of empirical research or new management methods. It is suggested that the teachings of management accounting and control be based on insights from academic research prevalent within the descriptive approach to rationality.

Keywords: *management accounting, management control, formal rationality, textbook*

Introduction

What managers need to know and what support they need for managing has been contested ever since Fayol (1916/1999) dismissed managers' need for advanced mathematics and asked instead for a management education for engineers, the future managers. However, over the years, the nature of management education has been equally contested. In Sweden, "bookkeeping" was found to be neither practical, nor theoretical; therefore, non-academic. Similar objections were raised in the US – should the shrouds of Chaucer and Shakespeare be tainted by people whose only motivation was gold (Engwall 1995)?

The discussion on practical skills versus academic insights has continued into the 21st century, when management education has been found to be irrelevant for managerial practice (e.g., Mintzberg 2004, Bennis and O'Toole 2005). Should students learn the techniques of collecting information, calculating, and pondering about the future that the authors of textbooks on management accounting and control describe as vital? Or should they be given an opportunity to familiarize themselves with relevant academic research, which would give them generic skills and prepare them for a future as either managers or academics (Burnett 2003, Starkey and Madan 2001, Webb and Chaffer 2016)? Should they even be taught to reflect on the nature of accounting and control, and to understand the "conceptual underpinnings" and ideological overtones of existing rules, procedures, and practices (Chua 1986, 1996, Jönsson and Macintosh 1997, Jönsson 1998, Porras 2000, p. 2)? Recent discussions point to the need for curricula that include flexibility, reflexivity, and skepticism and are founded in sociology rather than the

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technical skills that the professional bodies traditionally asked for (e.g., Agrawal et al. 2021, Boyce et al. 2019, Terblanche and De Clercq 2021). The fact that that big accountancy firms value interpersonal and communication skills and prefer to hire graduates from other academic disciplines than that of accounting might threaten the legitimacy of the accounting education, it has been argued (Douglas and Gammie 2019).

One reason for the discrepancy between management research and the teachings of management accounting and control concerns diverging understandings of rationality. Whereas empirical research acknowledges alternative ways of reasoning as rational, management accounting and control textbooks favor formal rationality as the only acceptable – rational – type of rationality¹.

This paper builds on the contrast between two approaches to management accounting and control: that of empirical research – the descriptive approach – and that of management accounting and control textbooks – the normative approach. I discuss the relationship between these understandings and the rationale for the discrepancy that has persisted over the decades. What are the arguments for digressing from the Humboldtian ideal of a close relationship between academic teaching and research and promoting instead an ideal of formal rationality at universities worldwide?

I start by characterizing the two approaches to management accounting and control; their relationships to decision-making and to ideas of rationality. Because research on the complexity of managerial practice and the criticism of formal rationality as a basis for decision-making are well known, my interest lies with characterizing the normative, textbook approach. I then relate the two approaches to each other. I recapitulate arguments in favour of a distinction between research and teaching; then ask the question whether academics' loyalty to the textbook version of management is a token of disloyalty to the university and its Humboldtian ideal. Do management scholars distrust their own research results? Are they captives of the idea that formal rationality is superior to other types of reasoning? Are there other reasons for them to learn one thing and teach another?

The Descriptive Approach

Numerous studies of managerial practice at different points in time and in different countries show almost identical results: What works in practice *depends*. Managerial practice is idiosyncratic and situation specific, far from the idea of

¹Formal rationality is the type of rationality that builds on Weber's (1924/1964) means-end rationality (*Zweckrationalität*) and serves to make decision-making a systematic enterprise that precedes action. What is often referred to as the model of rational decision-making (Simon 1957/1965) expects decision makers to have clear and stable preferences – goals – that they can rank according to their importance. They need accounting and other types of information to investigate all conceivable consequences of alternative modes of action; then should choose the alternative that conforms with their goals in the most economically advantageous way. This model has been discussed since the early 1960s, and repeatedly found to be unfeasible for real-life decision-making (Brunsson and Brunsson 2017).

formal rationality (e.g., Carlson 1951/1991, Kotter 1982, Mintzberg 1973/1980, Stewart 1967, Tengblad 2000).

There is little support for the presumption that managers know their preferences in advance and do not change them with time, as they see the consequences of their decisions (Cyert and March 1963/1992, March 1976). Further, it is time-consuming and costly to collect information and choose among alternatives; managers may have to contend themselves with a far from exhaustive sample (Cyert and March, 1963/1992, Simon 1955). And because managers work in organizations, they must find support for propositions that they like through discussions and compromises (Douglas 1986, Simon 1957/1965, Weick 1969/1979).

Overall, the idea that the main task of managers is to make decisions is overrated. Managers are busy getting all sorts of information; they make decisions as a matter of routine, or when they feel obliged to, but in many instances, they avoid explicit decision-making in favor of delegation and unobtrusive initiatives (Barnard 1938/1968, Carlson 1951/1991, Tengblad 2000). Their use of accounting information as a basis for decisions is far from clear (Jönsson 1996, 1998). Perhaps managers are more impressed by gossip or their “wandering around” in the workplace (Feldman and March 1981, Peters and Waterman 1982), and perhaps trust functions as a substitute for advanced accounting systems (Tomkins 2001).

In short, academics have learnt that managers face intricate, idiosyncratic, and situation-specific expectations that cannot easily be standardized, and where it is far from certain that what has been decided is ever implemented (Barnard 1938/1968, Cohen et al. 1972, Pressman and Wildavsky 1973/1984). In managerial practice, many types of rationality, whether ecological, social, situational, flexible, selective or retrospective, make sense, and have been accepted as rational in certain contexts (Habermas 1981/1984, March 1978, Perrow 1986). Managers may claim to have made active use of accounting information and appeal to the idea of formal rationality for post hoc legitimization of certain decisions (Brunsson and Brunsson 2017). But this type of behavior is rather the opposite of what textbook authors propose.

The Normative Approach²

Why do managers need accounting? Why do they need management control systems, even “packages,” or hierarchies of control tools (cf. Malmi and Brown 2008)? Textbook authors provide one answer to these questions: to make decisions.

Starting from this premise, the presumption of decision-making along formal-rationality lines proves fundamental to the teachings of management accounting and control. This presumption, in turn, is based on a presumption of general relevance. It makes management into a matter of calculation, with part descriptive, part normative connotations.

²This section is based on a study of six introductory textbooks on management accounting and control; see appendix.

Presumption of formal rationality: An insistence on formal rationality means that goals become the very rationale for management accounting and control; they constitute an integral part of hierarchies of visions, strategies and numerous other planning activities. Management accounting should provide information specifically intended to support managers' decision-making, thereby facilitating their proactive, future-oriented behavior. The need to simplify complicated calculations or planning procedures for practical reasons is a regrettable limitation to the formal rationality ideal.

The presumption of stable goals allows textbook authors to treat management accounting and control as if they entail methods of a separate nature from those found through research or in managerial practice. Moreover, this presumption makes it possible to distinguish between "good" and "bad" decisions: "You should now know how to make good decisions based on relevant data" (Horngren et al. 2011, p. 260).

By omitting references to wider social concerns, the textbook authors make management accounting and control into apolitical, neutral undertakings, devoid of explicit political implications, but requiring managerial expertise. It is assumed, even seen as self-evident, that the rules of formal rationality promote effectiveness and strengthen a relationship between management and organizational success: "... organizational success depends on a good MCS [management control system]" (Merchant and Van der Stede 2007, p. 12).

Presumption of general relevance: In line with the argumentation of the "management forefathers" Fayol (1916/1999) and Taylor (1911/1998), the teaching of management accounting and control is *not* situation-specific but based on generalized notions of organizations. Textbook authors take the organization as their starting point and see management control as an integral organizational element: "Management control is a must in any organization" (Anthony and Govindarajan 2007, p. 1).

A calculative approach: In the textbooks, elaborate planning and calculative procedures provide order by reducing managerial leeway. Related to the rational outlook is an interest in measurements: "In other words, what you measure is what you get" (McWatters et al. 2008, p. 202).

The idea of balanced scorecards is one example of how "planning decisions" and "control decisions" (a terminology used by McWatters et al. 2008) may be combined. Despite certain drawbacks, the scorecard should function as a superior method of creating order; it is "a tool and a method to work directly towards the chosen strategy" (Greve 2009, p. 67).

A similarly noticeable area of interest is that of budgeting. Anthony and Govindarajan (2007) assume that specific operating budgets be compiled for each business unit as well as the organization in its entirety (p. 384). McWatters et al. (2008, p. 280) describe the budget process as comprised of thirteen different budgets.

The calculative approach is coupled with a non-emotional attitude to people, who appear rather as mechanical devices, to be set in motion and guided in the right direction by a clever design of incentives. A top-down perspective makes the management control problem into one of inciting subordinates to exert themselves.

Consequently, the question of motivational targets becomes a question of calculation, because “stretch goals” are seen to be stimulating only to a certain degree. Merchant and Van der Stede (2007), for example, propose budget targets with a 50% probability of achievement. The textbook authors ignore intricate problems related to the work or personality of their subordinates; nor do they discuss how managers should deal with their own shortcomings or biases (cf. Bennis 2000, McCormack 1984, 1989, Stein 1999) – or situations where subordinates take the role of managers (Carsten et al. 2010).

Between is and ought: The management accounting and control textbooks may seem overly idealistic, even unrealistic. Yet American textbook authors refer to an abundance of existing organizations to illustrate their discussions. Anthony and Govindarajan (2007), for example, refer to 338 organizations; other US authors to at least 100. Having few such references, Swedish authors use phrases like “often,” “in practice,” “it is common that ...” and similar such expressions (translated from Swedish). The differences probably reflect traditional ideals of style, but serve the same purpose – in both cases, the references function as empirical support for the proposed tenets.

Still, the textbooks are clearly normative. For example, the authors describe hierarchical relationships between long-term and short-term planning procedures, instruct the students to learn the names and meaning of various types of budgets, and recommend them to be alert to opportunity costs, but forget about sunk costs. Horngren et al. (2011) caution against the use of unit fixed costs and recommend total fixed costs as an information basis for “good” decisions. They further stress the importance of congruence between analytical decision-making and the evaluation of performance:

... knowing how to make these [good] decisions and actually making them are two different things. ... To motivate managers to make optimal decisions, methods of evaluating managers’ performance should be consistent with their appropriate decision model. (p. 260)

Other examples of similar, general, and principle-based advice include the design of reports on budget evaluations (Ax et al. 2009, pp. 258–259), performance measurements (McWatters et al. 2008, p. 202), and the number of performance measurements in a balanced scorecard (Merchant and van der Stede 2007, p. 475).

In sum, the textbooks are simultaneously descriptive and normative. Even when the authors describe an accounting or control method in a non-committed, apparently neutral way, the texts become implicitly normative by the examples or the value-laden evaluations that they bring forth. (Incidentally, authors of popular self-help books, who seek to install an entrepreneurial spirit in their readers, use the same technique, when they let stories from their own lives prove the effectiveness their advice; see for instance Vallas and Cummins 2015).

When an issue is clearly problematic – when for instance an organization has multiple objectives, and its staff find their motivation in a variety of ways – the authors tend to formulate their recommendations as general principles:

Design incentives so that individuals who pursue their own self-interest also achieve the organization's objectives. Because there are usually multiple objectives, multiple incentives are appropriate. Do not underestimate the difficulty of balancing these incentives ... (Horngren et al. 2011, p. 388).

In sum, textbook authors provide recommendations that they expect their readers to accept at face value. Students or the teachers who recommend the textbooks must trust the authority of the authors, believe that they are right, and find their instructions valid.

The Descriptive Versus the Normative Approach

Although empirically based, thus realistic, the descriptive approach to management appears pessimistic. It questions the simple rules of formal rationality, the feasibility of decision-making according to these rules, and the overall importance of accounting and managerial decision-making. It accepts alternative understandings of rationality, and describes management as a mishmash of confusing and frustrating reactions and initiatives, and managers as hopelessly enmeshed in all sorts of depressing "people issues." To assess managers' contribution to organizational achievements is difficult. Whether managers use accounting information as a basis for their decisions – or claim to use or have used such information is contingent and situation-specific.

The normative approach, in contrast, comes with optimistic connotations. It makes decision-making into a systematic enterprise. The arrangement of concepts into hierarchies, the calculative approach, and the reference to accounting systems all underline the orderly character of management control, designed to create order also in the organizational future (Brunsson 2017, Malmi and Brown 2008). Founded on presumptions of formal rationality and a clear relationship between managerial decision-making and organizational success, it strengthens the role of managers and makes their job seem worthwhile and rewarding. Because the idea of formal rationality entails informed decision-makers, the need for accounting information seems obvious.

So far, I have described the two types of approaches as if they are independent of one another, but this is only partially true. Whereas the normative approach appears largely self-sufficient, the descriptive approach depends on ideals put forth in management accounting and control textbooks.

Authors of management accounting and control textbooks recognize and accommodate to new management methods but reluctantly. For example, Ax et al. (2009, p. 53) argued that new methods would be more widely accepted, if they were truly functional; moreover, managers always had the option of choosing among methods, they noted. McWatters et al. (2008, pp. 551–552) defined *lean* as "old wine in new bottles." Nor did these authors acknowledge the much-discussed phenomenon of management fashions, which Greve (2009, p. 14) described as adding "one new idea on top of the other." This attitude helps stabilize the textbook approach. Although the very purpose of the methods and systems described is to initiate change in turbulent organizational environments, the recommendations

remain stable, largely unaffected by external circumstances, research findings, or the academic discourse (cf. Maher 2000).

Many academics presumed familiarity with textbook presumptions of formal rationality, as they contrasted their observations of managerial decision-making and practice to expectations of order and control, like that described in the textbooks. They used apprehensions of how management ought to be performed – “conventional wisdom,” “managerial folklore,” or “managerial half-truths” (Mezias and Starbuck 2003, Pfeffer and Sutton 2006, Scapens 1985) either to question the feasibility of rational decision-making, or to admonish managers to work more in line with normative ideals. At times, their empirical observations even induced academics to recommend a return to formal rationality and a more orderly managerial practice (Holmblad Brunsson 2007).

When related to preconceived ideas of formal rationality, observations of decision-making based on ad hoc occurrences or emotions appeared novel and critical, and studies of managerial practice surprising. The textbook ideal of formal rationality served as a background for empirical studies of rationality, decision-making, and managerial practice and made these studies appear interesting. Without a background of formal rationality and a calculative type of order they might have been found commonplace. There would be little reason for an experienced academic to be surprised by the effectiveness of an unwieldy managerial practice:

One cannot help wondering if, perhaps, all these intelligent, successful managers indulge in managerial work characterized by brevity, variety and fragmentation because it is an efficient way of running a company! (Jönsson 1996, p. 146)

In sum, the relationship between the two types of approaches to management accounting and control has been one-directional: Whereas the normative textbook approach has been largely independent of research or the appearance of new management methods, the descriptive, research-based approach has been dependent on a preexistent understanding of formal rationality as a basis for decision-making. Explicitly or implicitly, this approach served to make academic research interesting.

The question remains, however, whether this observation is a good enough reason for teaching students all over the world the rules of formal rationality as a basis for decision-making and order, which academics disavowed many decades ago. In the next section, I recapitulate (and contest) some arguments for the use of textbooks as an introduction to management accounting and control.

Arguments for Textbooks

Different rationales help explain the use of textbooks. One is trivial and unrelated to the discussion of what students should learn: the fact that, by now, there is a worldwide industry producing and marketing textbooks. Many are voluminous and come in numerous editions. For example, *Introduction to Management Accounting* by Horngren et al. (2011) had 845 pages, in its 14th

edition. *Management Control Systems* by Anthony and Govindarajan (2007) with 768 pages was also in its 14th edition. A similarly peripheral rationale is that textbooks are meant to make students aware of the historical development of their topic; therefore, they are designed as history books, which repeat, though in a verbose manner the recommendations of Henri Fayol (Harding 2003, Holmblad Brunsson 2007). There is little evidence of any such intention in the textbooks, however; rather, the authors insist that their instructions are relevant and useful.

Another type of rationale relates to pedagogy: Authors introduce the idea of formal rationality (though unobtrusively, as if it were self-evident) because they have found that students must be familiar with basic concepts and expected relationships before they can appreciate empirical studies of managerial practice. A management education takes several years. Later in the curriculum, the students will be introduced to academic research on rationality, decision-making, and other management-related complexities. These arguments are reminiscent of the situation Fayol (1916/1999) described in the early 20th century, when engineering students were taught advanced mathematics as an exercise to develop their intellectual faculties. Similarly, high schools of the early and mid-20th century taught classic Greek and Latin as a basis for their education in modern languages. In both instances, the idea seems to have been that students' mental abilities need special training and development before the education in their chosen subject can begin.

However, there is little to indicate that the textbook recommendations are "easier" than empirically based research reports. To the contrary, the sheer size and weight of the management accounting and control textbooks indicate that a basic textbook understanding of management accounting and control requires patience, not unlike that of learning advanced mathematics or classic languages. But in this instance, normative and ideological implications are added to concepts and complicated relationships: Managers need accounting information to make "good" decisions.

Whether or not – and when – management teachers introduce their students to academic research probably varies, as does the teaching of management accounting and control in the classroom. Textbooks do not cover teaching in its entirety. Academic journals on management and accounting education are replete with suggestions for pedagogical improvement and examples of successful experiments and learning projects. Teachers have the option of experimenting. They can add research-based observations during lectures and seminars (Greve 2007). By using case studies, online material, or their own experience they may mitigate the formal-rationality bias of the textbooks.

But chances are that the authority of the well-established authors of textbooks makes a greater impact on students' understanding of management than empirical evidence of managerial practice presented by local teachers later in the curriculum. The textbooks become the most "persuasive representations of accounting" (Cuganesan et al. 1996, p. 433). The question why students must adopt the idea of formal rationality if their understanding is to be modified anyway is left unanswered.

In Favour of Research-Based Understanding

Over the years, management accounting practice has continuously changed depending on, among other things, globalization and variable business environments, new technology and improved opportunities for the delegation of decisions, reorganization and new roles for management accountants, and blurred distinctions between management and financial accounting (Burns and Baldvinsdottir 2005, Burns and Vaivio 2001, Maher 2000, Taipaleenmäki and Ikäheimo 2013).

The role of academics has changed in parallel. Rather than providing recipes for practical use, which was perhaps a pressing charge one hundred years ago (cf. Engwall 1995), their task has become one of critically assessing and understanding practice (Nisbet 1962, Merton 1967, Davis 1971). By now there is ample evidence of the idiosyncratic and situation-specific character of managers' use of accounting. Whereas, earlier, academics used textbook views on management as a contrast to their empirical observations, making them appear novel and surprising, any such comparison no longer merits attention. There is a general understanding that various types of rationality make sense in a managerial environment. The observation that managers' use of accounting may serve post hoc rationalization purposes as much as they provide bases for decision-making has become "conventional wisdom" (cf. Brunsson and Brunsson 2017).

Yet students of management accounting and control are told the very opposite – by pretending to apply to all types of organizations and through their calculative approach to people, textbooks lead students to believe that formal rationality is the only valid type of rationality. Their insistence on stable sets of concepts and relationships – systems or models in support of proactive decision-making – will further induce students to see reactive or emotionally-based decisions, or decisions based on gossip, as unprofessional instances of management.

The textbook approach appeals to a specific type of students; those who like straightforward *yes* or *no* answers to difficult questions and feel gratified by mastering complicated calculations and exercises. In real-life organizations these students must develop personality traits considerably different from the ones endorsed during their education (cf. Hill 1992). Like the former students of advanced mathematics or classic languages, they will find that their academic education is of little avail, and the many hours spent on the textbooks wasted. At worst, their education will function as a barrier to their ability to learn from experience (cf. Livingstone 1971).

For university teachers, textbooks provide a convenient outline for their teaching. To rely on tradition and continue to use well-established textbooks involves few risks; possibly it appeals to anxious teachers, who like some students appreciate the order and calculative approach of the textbook authors. To others, the addition of currently hyped topics, such as ethics, sustainability, or some pedagogical experiment, may provide a sense of revitalization of their teaching. Only rarely do academics find reason to question the "conceptual underpinnings" of what they tell their students. Rather, an insistence on theory development seems to side-track them into ever more subtle research questions and to reports that

make little or no impact, because they are “formulaic, cautious, dull, and unreadable” (Peters and Thomas 2020, Tourisch 2020, p. 101).

A close study of one management accounting textbook led to the conclusion that the teachings of management accounting was disconnected from wider social, economic, and political issues and did little to inspire a critical and emancipatory mind (Cuganesan et al. 1996). A study of five textbooks twenty years later (Golyagina and Valuckas 2016) similarly concluded that students were deprived of fully understanding accounting as a discipline, because these books focused on techniques, but did little to encourage critical thinking, or help students become aware of predominant ideologies inherent in current practices.

The authors of these studies suggested – twenty years apart – that management accounting textbooks be used not as instructive textbooks, but as empirical evidence of a specific worldview, to be analyzed and evaluated in a critical vein by teachers and students. A more radical proposal is to abandon the very idea of textbooks and make management accounting into an academic discipline.

In the end, the question becomes one of academic education generally and the type of personality this education should seek to develop. Arguably, business students misunderstand what matters in life because their curricula are replete with economic models, an emphasis on material values, competition, and the need to motivate ethics financially, a “naïve, limited, impoverished, or simply mistaken” understanding of management (Fellenz 2019, p. 425, Giacalone and Promislo 2019). Worse, students may misunderstand the very nature of what they are taught and believe that there are objective and unambiguous truths (Brahm and Jenert 2019). Arguably, all teaching within the social sciences is biased and based on ideology (e.g., Charlier et al. 2019). Yet the question remains whether “intellectually embarrassing” textbooks on management accounting and control should continue to incite students to conform to situations of “functional stupidity” (Alvesson and Spicer 2012, 2016, Demski 2007, p. 156). Should the (authoritative) authors of management accounting and control textbooks remain uncontested, as they disseminate the specific ideology that comes with formal rationality?

In the end, the question is also one of honesty, even morality. By supporting an industry of textbooks, promulgating recommendations that disregard evidence from empirical academic research, academics abandon the Humboldtian ideal of a close relationship between research and teaching to which some 800 universities in Europe subscribe (Nyborg 2014). They ignore the social orientation that should characterize a discipline within the social sciences (Swedberg 2014). Ideals of formal rationality proliferate in contemporary society, and both families and individuals are encouraged to live goal-oriented and productive lives (Covey 1989, Meyer and Bromley 2013, Bromley and Meyer 2015). The popularity of this idea is yet another reason to question whether it should receive unreserved support from an academic discipline presumed to honor critical attitudes and high moral standards.

Conclusion

After more than one hundred years of business studies, there is sufficient academic research on which to base the teachings of management accounting and control. Engineers no longer need a degree in advanced mathematics to become managers. Students can learn modern languages without previous knowledge of classic Greek or Latin. In the 21st century, students come to the university to develop their critical and creative thinking and to grow as intellectual, emancipated, and socially conscientious citizens. They need neither textbooks, nor a programmatic attitude to rationality. A reorientation of the teachings of management accounting and control does not seem unfeasible – but urgent.

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Appendix

The section on normative management is based on a study of six management accounting and management control textbooks. Four books were published in English and two in Swedish (Holmblad Brunsson 2011):

- *Management Control Systems* by Robert Anthony and Vijay Govindarajan (2007), 768 pages, 14th edition.
- *Den nya ekonomistyrningen* [The New Management Accounting] by Christian Ax, Christer Johansson and Håkan Kullvén (2009), 532 pages, 4th edition.
- *Ekonomistyrning, principer och praxis* [Management accounting, principles and praxis] by Jan Greve (2009), 592 pages, 1st edition.
- *Introduction to Management Accounting* by Charles Horngren, Gary Sundem, William Stratton, David Burgstahler and Jeff Schatzberg (2011), 845 pages, 14th edition.
- *Management Accounting, Analysis and Interpretation* by Cheryl McWatters, Jerold Zimmerman and Dale Morse (2008), 604 pages, 3rd edition.
- *Management Control Systems* by Kenneth Merchant and Vim Van der Stede (2007), 850 pages, 2nd edition.

I based my selection on different criteria. The two books in Swedish were the most widely used books in a Swedish context, the books by Anthony and Govindarajan and Holmgren et al. were age-old, as indicates their numerous editions (cf. Maher 2000), and the book by Merchant and van der Stede is a similar, though more recent, book, also used at Swedish universities. I chose the book by McWatters et al. because it is somewhat slimmer, thus, perhaps, with a different approach (which, as it turned out, I did not find).

As seen from the list all are voluminous books; they each weigh between one and one and a half kilograms. They are all introductory textbooks, to be used by first- or second-year students; however, their use may vary, and some may be used for more than one course. In later editions, the authors update their texts by commenting on such popular topics as, for example, business ethics, sustainability, or agile project management. They do not change their basic outlook and emphasis, however.

My selection is arbitrary in the sense that numerous textbooks on management accounting and control were omitted – for example, the library at Uppsala University suggested close to 1 200 books or e-books with the words *management accounting* or *management control* in their titles (as of June 8, 2020).

Although there probably exist textbooks with various views on rationality, specifically if the selection is made from other areas of the management discipline (cf. Charlier et al. 2019), there are indications that numerous students worldwide are asked to familiarize themselves with the formal rationality ideal, as it is presented in my selection of textbooks:

- (i) A formal rationality ideal concurs with global tendencies (Meyer and Bromley 2013, Bromley and Meyer 2015).
- (ii) The content of the textbooks has proved stable over the decades, and is still strikingly similar to the recommendations of Henri Fayol more than a century ago (Harding 2003).
- (iii) The books appear in several editions, which indicates a continual demand for these textbooks.
- (iv) Publishers report on sales not only in the US, Canada, and Europe, but also in Asia and “other countries” (e.g., Pearson 2020).

Due to the popularity of business and management studies (Navarro 2005, Alvesson et al. 2017) and because textbooks remain a central resource in almost any course on management accounting and control (Cuganesan et al. 1996), it seems reasonable to infer that the idea of formal rationality is communicated to a substantial number of students in large parts of the world.

Innovation Driven by Cooperation of Startups and SME

By Manuel Niever*, Ilona Martina Scholz[±] & Carsten Hahn⁺

With rising need for innovation within a complex and dynamic world, cooperation between complementary partners offers potential to create competitive advantage. Early-stage start-ups and small and medium-sized enterprises (SMEs) can exploit opportunities by cooperating early and jointly developing new innovation. Despite research into cooperation between established start-ups and SMEs existing, there is no specific concept or support options for cooperation in an early stage. Intermediaries are named as a helpful support option; however specific tasks are not analysed. This research provides insight into various support options in the context of cooperation between early phase start-ups and the German “Mittelstand”. Within the framework of the Design Research Methodology (DRM) the results of a literature research and qualitative interviews are presented in a Reference and Impact Model, which show the need for support in the cooperation of start-ups and SMEs. Based on the findings, a four-phased cooperation process is proposed, which includes support possibilities in each individual phase. A comprehensive evaluation plan in the context of practical application completes this work.

Keywords: innovation management, cooperation support, cooperation process, early-stage start-ups, open innovation

Introduction

Cooperation between start-ups and SMEs have great potential to drive innovations (Engels and Röhl 2019). Two worlds collide: start-ups work in agile and in flat hierarchies, while medium-sized companies may be more flexible than large corporations, but are still structured by rigid processes (Wrobel et al. 2017). These differences can be seen as potential when it comes to cooperation, as both parties can benefit from each other.

Whilst promising potential exists, challenges must be overcome in order to use these opportunities. Studies differ to some extent on the success of such cooperations. According to a study by the German Productivity and Innovation Centre (RKW) in almost 70% of the cases cooperation goals are achieved (Wallisch and Hemeda 2018). However, according to a study by Becker et al. (2018), 38% of start-ups say they are rather dissatisfied and a further 8% are very dissatisfied with their cooperation with SMEs (Becker et al. 2018).

In this context, intermediaries are seen as an important possibility for support, especially in initiating contacts (Wrobel et al. 2017). In previous studies on cooperation, recommendations for action are formulated for start-ups and SMEs,

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but intermediaries themselves are not the focus of surveys or analyses (Becker et al. 2018, Wrobel et al. 2017). Accordingly, the focus so far has been on possibilities for improvement within the two parties themselves. Here, the research focuses on support options for this particular type of cooperation in order to exploit the full innovation potential.

Focusing on start-up founding teams which already cooperate with SMEs in the early phase instead of on already established start-ups, this research opens up a new perspective of collaboration in the context of open innovation. Through this early cooperation, SMEs have early access to new innovations that can be implemented in start-ups with the required degrees of freedom and agility. The founding teams could thus benefit very early on from the support of an experienced and well-equipped partner who can provide the necessary resources that the founders lack. There is currently little literature on this type of cooperation, which is why this research investigates with the aim to provide more insights and create impulses for further research.

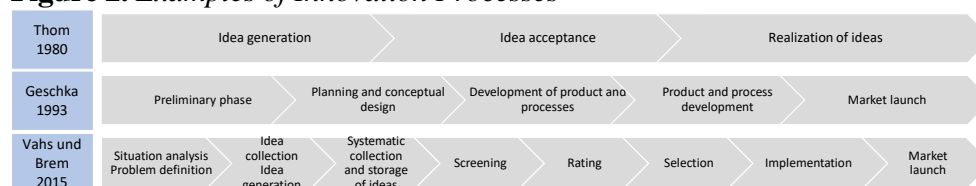
Literature Review

The State of the Art describes innovation processes within SMEs, as well as founding processes and existing cooperations between start-ups and SMEs.

Innovation Processes of SME

There are numerous approaches to outline and describe innovation processes. More “traditional” approaches as described in Geschka (1993), Thom (1980) and Vahs and Brem (2015) (see Figure 1) as well as more agile approaches and open innovation. Generally, an innovation process starts with a situational analysis of the demand and ends in entering the market with a new product, service or business model. Following the definition of innovation by Schumpeter (1926), such a process is successful, when an invention becomes an innovation by the diffusion into the market.

Figure 2. *Examples of Innovation Processes*



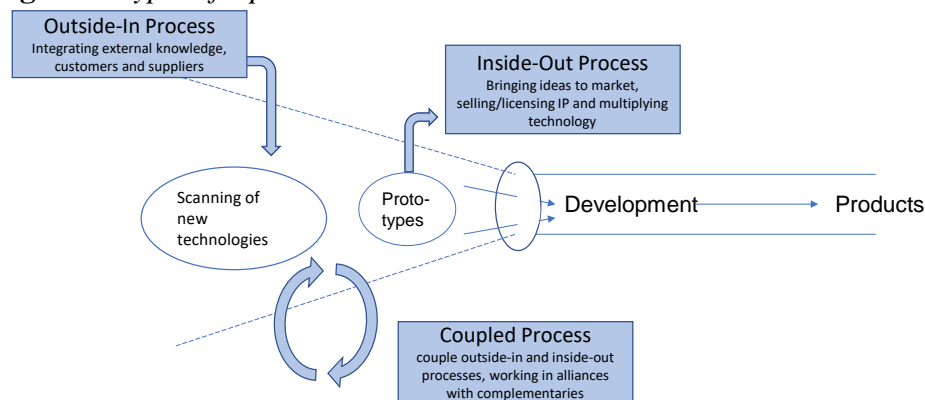
Source: Vahs and Brehm 2015, Thom 1980, Geschka 1993.

With the different forms of representation of innovation processes, it becomes clear that it is difficult to develop a process that is both generally valid and detailed enough to represent its complexity (Vahs and Brem 2015). As explained by Tsifidaris (1994) and Vahs and Brem (2015), the representation of an innovation process as a phase model is problematic. This is due to the fact that in a real innovation process,

individual phases cannot be clearly separated from each other, which leads to “iterative feedback” between individual phases (Tsifidaris 1994). Accordingly, the representation as a phase model is to be seen as an aid, which represents innovation processes as “multi-stage problem-solving processes” (Tsifidaris 1994). Thus, they are to be understood as a model to support the planning and execution of development activities instead of a true description of real decision-making processes.

A further development of “traditional” innovation process models is the concept of Open Innovation. The Open Innovation approach originates from Chesbrough (2003) and describes the opening of the innovation process to the outside (Vahs and Brem 2015). While closed innovation principles involve developing resources within the company and retaining control over them, open innovation relies on sharing knowledge and resources between parties (Chesbrough 2003).

Figure 2. *Types of Open Innovation Processes*



Source: Gassmann and Enkel 2004.

Figure 2 describes the three types of processes in open innovation: Outside-In, Inside-Out and Coupled Process (Gassmann and Enkel 2004). In the outside-in approach, external knowledge is used to improve one's own innovation processes. This can be implemented through the integration of customers and suppliers as well as external technology sourcing (Gassmann and Enkel 2004). In the inside-out approach, innovation processes are initiated from within the company to the outside. The aim is to bring the company's own ideas to the market. This can take the form of intrapreneurship programs and business incubators (Wrobel et al. 2017). There is also a coupled approach in which both approaches are linked. For this purpose, companies cooperate in strategic networks. Here, the exchange of knowledge between the different parties is seen as critical to success. In this context Gassmann and Enkel (2004) define cooperation as the joint development of knowledge with competitor companies, customers and suppliers, joint ventures and alliances or universities and research centers (Gassmann and Enkel 2004). The cooperation between start-ups and SMEs can be classified as such a coupled process, as knowledge between both parties is shared.

Founding Processes of Startups

A start-up is understood as “a human institution designed to create a new product or service under conditions of extreme uncertainty” (Ries 2011). This “temporary organization [is] in search of a scalable, repeatable, profitable business model” (Blank and Dorf 2012). From the emergence of an initial idea to the founding and possible exit of a start-up, numerous steps are taken. Freiling and Harima (2019) emphasize that the entrepreneurship process is not straightforward, but true to Hayek's motto of “trial and error”, testing and learning from experience. They divide the entrepreneurship process into three stages: pre-founding phase, founding phase and growth phase. The aim of the pre-founding phase is finding a promising idea (Jung 2004). Another classification divides start-ups into different life-cycle stages: seed, start-up, growth, later and steady stage (Kollmann et al. 2020).

In this paper, the early phase of a start-up is understood as the seed stage. Here, the iterative further development of a business idea plays a role and there are no sales or users yet (Kollmann et al. 2020). In addition, the early-stage is characterized by the fact that there is a financing gap, as there are no investors yet (Freiling and Harima 2019). In this work, there is the premise that there is already at least an initial concept that founders can present to interested companies. Otherwise, every idea could be classified as the beginning of the pre-founding phase.

In the context of this research the following definition of founding teams was used (Lechler and Gemünden 2002): *Start-up founding teams consist of at least 2 natural persons who intend to jointly found a start-up and thereby assume a significant share of equity capital and active management functions as well as bear the business risks.*

Cooperation of Startups and SME

The primary goal in cooperation between companies is the increase in performance and improvement of the competitiveness of both parties (Benisch 1973). Cooperation goals are closely linked to cooperation motives and both are often not distinguished from each other in the literature (Becker et al. 2018, Wrobel et al. 2017). Access to resources and competences, which in turn serve the goal of generating competitive advantages, are also main motives (Gerybadze 2005). For such an exchange of resources, a complementary relationship between the partners is important. If cooperation partners can close each other's resource gaps, this is referred to as a closing-gap alliance (Porter and Fuller 1989).

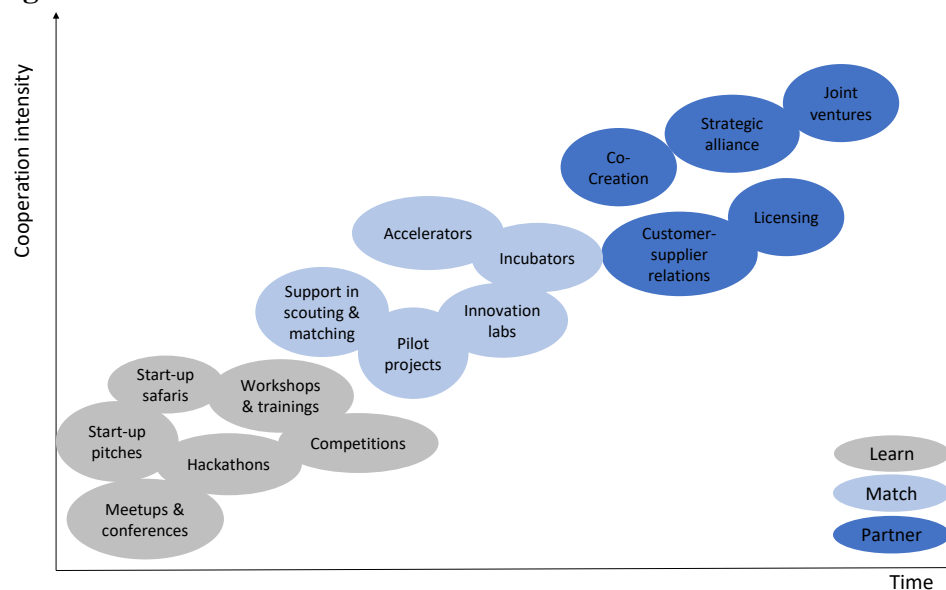
In the context of cooperation between start-ups and companies, numerous different goals can be distinguished on both sides. The cooperation aims to create advantages in that start-ups bring innovativeness and agility to the company, while the latter provides resources (Kuckertz 2017). It can be stated that cooperation on the part of the start-up is often seen as crucial for survival, while on the part of the company it is often merely carried out as a defense strategy (Becker et al. 2018, Kuckertz 2017).

A study by the Alexander Humboldt Institute for Internet and Society presents a systemization of collaboration models between start-ups and SMEs according to

the phases Learn, Match and Partner (Figure 3). The classification is based on the duration of the collaboration and the intensity of the cooperation.

In the Learn phase, the two parties get to know each other, and first contacts and short-term activities take place. In this phase, intermediaries are also active, connecting the two worlds. The aim is to develop understanding between the parties involved, recognizing differences in processes and mindsets. The Match phase includes aims to determine whether the two partners fit together. This takes place in the context of medium-term activities such as accelerators or incubator programs, innovation labs and pilot projects. In a best-case scenario, such a cooperation then moves on to the next phase, the Partner phase. This phase is characterized by medium- to long-term activities such as co-creation, joint ventures and strategic alliances (Wrobel et al. 2017).

Figure 3. *Learn-Match-Partner*



Source: Wrobel et al. 2017.

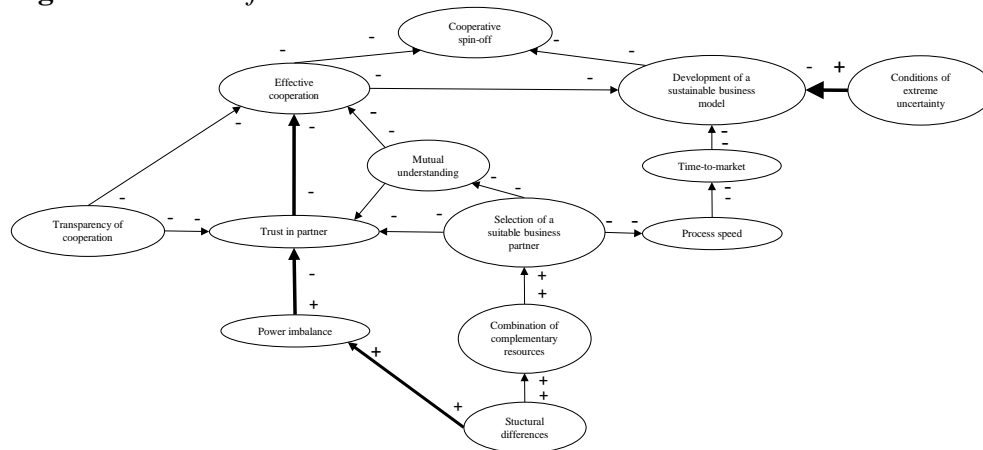
Methodology

Current research shows various possibilities for Start-ups and SMEs to cooperate in order to maximize innovation potential (Wrobel et al. 2017, Becker et al. 2018). However, specific approaches for cooperation with early-stage start-ups are lacking, as well as support options for both parties through entities such as intermediaries. Given recommendation for improvement on cooperation are focused on an internal view of both parties, although external support options are seen as valuable. Questions remain on what areas need support and how a cooperation process looks like in this specific scenario.

Given the state-of-the-art insights on cooperation between established start-ups and SMEs, the initial situation is resembled in an initial reference model as seen in Figure 4. It explains how different factors have an influence on each other

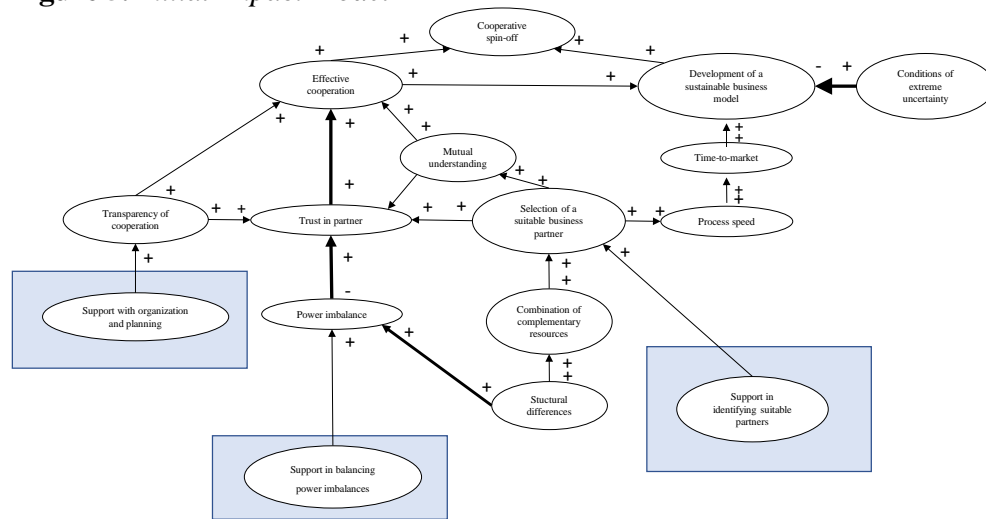
and the goal of such an early cooperation, a cooperative spin-off. For example, strong structural differences between partners increase power imbalances between both parties (Wrobel et al. 2017). This in turn negatively influences trust between partners and therefore also the effectiveness of the cooperation (Gründerszene 2020). Two other strong influences on the effectiveness of a cooperation are the transparency and mutual understanding of both parties (Becker et al. 2018, Wrobel et al. 2017). Cooperation with a firm can also slow down the speed of start-up which in turn negatively influences the whole process of developing a promising business model in uncertain market environment (Wrobel et al. 2017).

Figure 4. *Initial Reference Model*



Source: Own illustration based on literature review.

On the basis of this initial reference model, the initial impact model was developed (see Figure 5). It shows what areas could be improved through support. The aim is to reverse the negative influences described in the initial reference model through support options in order to maximize potentials of such cooperation. Initially three areas of possible support were identified: Support in organization and planning, balancing power imbalances and identifying suitable business partners (as highlighted blue in Figure 5). For example, support in the area of organization and planning, such as defining clear cooperation goals (Wrobel et al. 2017), could have a strong positive effect on the transparency and therefore positively influence the trust between partners as well as the effectiveness of the cooperation. Supporting the cooperation by outbalancing power imbalances could also have a strong positive effect on trust. The identification of suitable business partners could additionally speed up the cooperation process and improve understanding between partners (Becker et al. 2018).

Figure 5. Initial Impact Model

Source: Own illustration based on literature review.

Based on this model the following research questions were derived and hypotheses on the effects of the support are formulated.

Research Question 1: To what extent is there a need for support for cooperation in start-up teams and companies?

H1: Support in identifying suitable partners has a positive effect on the speed of the process.

H2: Support in identifying suitable partners has a positive effect on trust in the cooperation partner.

H3: Support in planning and organisation improves the transparency of the cooperation between the founding team and the SME.

H4: A mediator balances out power imbalances between the founding team and the SME.

Research Question 2: How can a cooperation process between start-up teams and SMEs with support possibilities in the individual phases be structured?

H5: Essential phases of the cooperation process are the selection of a suitable cooperation partner, the validation of the business model in the market and the subsequent evaluation regarding continuation.

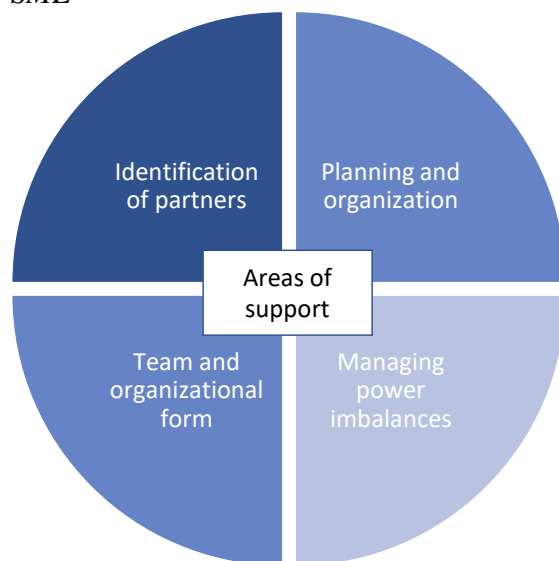
This research is based on the Design Research Method (DRM) according to Lucienne Blessing and Amaresh Chakrabarti (Blessing and Chakrabarti 2009). A qualitative content analysis of interviews with start-up teams and SMEs was used to gain an understanding of the point of views of the cooperation partners with regard to cooperation, possible cooperation process and support needs, and to further develop the impact model. Eight start-up teams and three SMEs in diverse industries were included in this study. The evaluation was carried out by a

qualitative content analysis based on Mayring (2015). Based on the results a cooperation process with support possibilities was developed.

Results

Four areas requiring support were identified: Support in identifying appropriate partners, planning and organisation of the cooperation, finding team and organisational form and balancing power imbalances (see Figure 6).

Figure 6. *Areas of Support in Cooperations between Early-Stage Start-Ups and SME*



Source: Own research.

Support in Identifying Appropriate Partners

When identifying suitable partners, it becomes apparent that a distinction must be made between selecting suitable business and finding the appropriate contact within the chosen organization. Both are considered as challenging by the participating companies. Besides restrictions in time, companies also struggle due to reserved attitudes towards innovation and high-risk investments. Founders struggle finding appropriate contacts due to missing networks and cooperative formats, little interest from companies and niche positioning of their products. The speed of the start-up is reduced due to the necessary time investment in finding partners, which is why this form of cooperation appears unsuitable for some participating founders of this study.

Specific demand for support was expressed in shape of offering loose and open formats, access to networks, direct mediation and critical pre-screening of the idea by other parties. In addition, templates already exist within some departments to check fits with potential start-ups. Those could be used to increase results in other companies.

Based on these results neither H1 nor H2 can be falsified, however given the focus on time constraints it seems that H1 is a more important factor.

Support in Planning and Organisation of the Cooperation

On the founders' side, interest in support regarding a structured procedure was expressed in terms of ready-made contracts for this specific form of cooperation. In addition, a clear definition of the objective in advance was considered important, which could reduce concerns about the loss of the idea and degrees of freedom. Thus, support in this area also has an influence on trust in the cooperation partner. In addition, prefabricated processes were desired, which can give an outlook on a possible course. In this way, founders as well as companies are aware of the resource requirements and rough process in advance and can decide to what extent they are prepared to do so.

On the company side, ready-made contracts are often used, and entire departments are responsible for cooperation management. Here, too, the size of the companies under consideration must be taken into account: Based on these results, it cannot be concluded that this is the case in all companies and industries. Nevertheless, support from third parties, such as higher education institutions, was perceived as helpful. Based on these results H3 cannot be falsified.

Support in Finding Team and Organisational Form

In the early stages, the team itself is still developing. On the founders' side, one team with collaboration experience mentioned that finding the optimal team members and form of the founding team took a long time. Therefore, it was stated as important to find the common motivators of a team in advance, as well as support in team building and team sourcing. The aspect of team sourcing, in terms of adding another member to the team, was identified by another founder as an aspect that early support could improve. Consultation in terms of necessary managerial and technical knowledge to lead a start-up would have been helpful in order to determine missing skillsets of the founding team early on and therefore speeding up the process. The support of the founding team also seems to be viewed as positive by the companies, as it reduces the fear of lacking commitment from new founders.

Support in Balancing-Out Power Imbalances

There is interest in mediators; in the context of power imbalances, support from experienced founders seems to be preferred to reduce uncertainties.

However, when considering the mediator role, it becomes clear that mediators can provide support at numerous points and should not be reduced to their role in the power balance. A stronger differentiation of the individual tasks of a mediator role is necessary here. Based on the results, different tasks have been identified. A mediator could use them in the context of cooperation in the early phase:

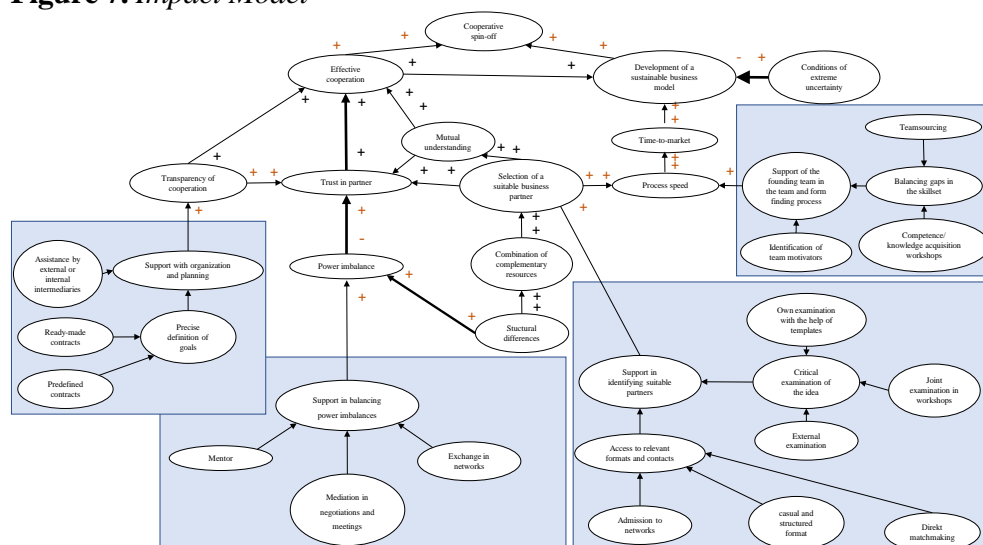
- Identification of suitable partners
- Challenging of the idea before contact initiation
- Initiation and maintenance of contacts: both for initial cooperation and for inclusion in the network
- Mediation in negotiations and meetings
- Conducting joint workshops
- Provision of material (term sheets, prefabricated processes)
- Consulting services: provide contacts for different areas of expertise such as law, taxes

The individual aspects listed so far cannot be conducted by a single person; a network of different actors is needed. If an institution can provide this network, it is also able to accompany the cooperation. However, this depends on the competencies and resources of the institution. Otherwise, it is possible to work with external partners to lead a cooperation. Therefore, a new hypothesis is as follows:

H6: A network of different individuals is necessary to support both founders and SMEs.

Based on these findings the impact model was expanded, including the different suggested support options, which are highlighted in blue in Figure 7.

Figure 7. Impact Model



Source: Own research.

Phases of a Cooperation Process

The reported processes on the company side are arranged differently and proceed according to different milestones. Nevertheless, they follow the same pattern: search for and selection of cooperation partners, development of the form of cooperation, a pilot and finally the decision on the continuation of the

cooperation. Therefore, a further subdivision would be possible, hence the hypothesis is extended to include the development of the type of cooperation as an additional important phase:

H5: Essential phases of the cooperation process are the selection of a suitable cooperation partner, elaboration of the type of cooperation, validation of the business model in the market and the subsequent evaluation with regard to continuation.

Additionally to the results regarding the research questions, the following insights were gained:

The main motives for cooperation on the company side in the early phase are access to talent and knowledge.

Companies that work with start-up teams at an early stage are not primarily pursuing the goal of finding or developing a new business model. Thus, gaining competence in agile mindset and methods is one goal for participating in incubator programs. In addition, access to talent is just as important, on the one hand for acquiring talent, and on the other hand for networking for later collaborations. The further development of ideas to the point of participation is seen as a “bonus”.

The need for support on the founder's side depends on character and experience.

The experience with and interest in support options and intermediaries on the part of start-ups varies greatly. For example, some founders have had good experiences with mentors, others have not. Some founders prefer direct contact with the company, others prefer support from experienced founders. The choice of tools seems to depend on the character type and experience of the founder. There is no “one-fits-all” solution. Accordingly, when considering the individual support options as part of constructing a process, it is significant to offer a selection from which individual founding teams can choose the support they need.

Experienced founders prefer building their own networks.

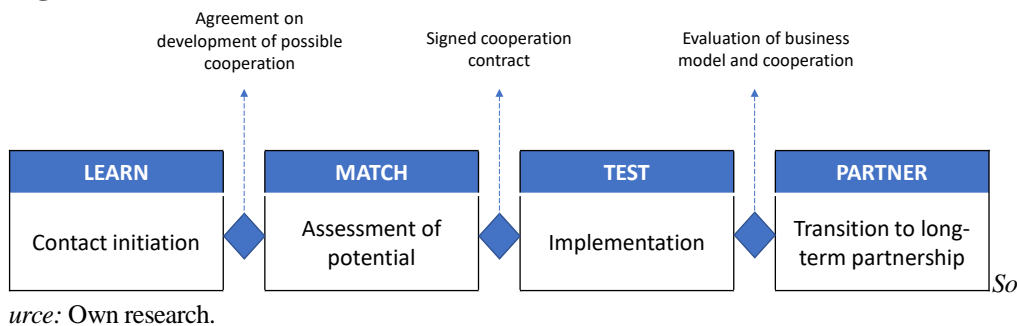
In this study, founders with experience gained from other start-ups or from working for accelerators and venture capitalists tended toward direct exchange with cooperation partners and building a network, and less toward an intermediary who establishes contacts. The role of an intermediary in the form of a person, is given less attention. Instead, in one case the establishment of advisory boards is preferred, which allows regular exchange with experts.

People are at the centre of cooperation.

Personal relationships and their impact on the success of a collaboration were discussed for both companies and founders. This refers not only to the collaboration between the start-up and the SME itself, but also to the relationship with a possible intermediary, with specialist departments within the company and with external consultants. The exchange in different networks between experienced founders, people interested in founding, companies and experts is accordingly seen as an important aspect. This both balances out uncertainties and forms new potentials through synergies. The early integration of departments into the process is also seen as a way of generating enthusiasm on both sides. This could be achieved, for example, through joint workshops in which specific aspects are developed together.

Based on the results, the following process model was developed, which is based on the Learn-Match-Partner Model as described in the literature review. Despite the sequential representation as a process model, this needs to be seen as an agile approach with iterative and incremental activities within the individual phases.

Figure 8. *Learn-Match-Test-Partner*



The developed process model as seen in Figure 8 is divided into four different phases:

1. **Learn:** In this phase, SMEs and founders get to know each other and learn about the respective problems and approaches to solving them. The aim is to establish contacts and get to know potential cooperation partners.
2. **Match:** This phase focuses on evaluating ideas and finding a suitable fit between the partners. In this phase it is determined whether the problem of the SME fits the solution of the founders. The focus here is on examining both the content and the cultural compatibility between parties.
3. **Test:** If there is compatibility between the SME and the start-up, a pilot project is launched. Prototypes are jointly developed and tested in the market. The phase ends with a joint evaluation of the business model and teamwork.
4. **Partner:** After evaluation of the first pilot, the two parties have numerous options for long-term cooperation.

At the end of each phase there are milestones which decide whether the joint work will be continued.

1st milestone: Consent to develop the form of cooperation

2nd milestone: Signed cooperation agreement

3rd milestone: Evaluation of the business model and the cooperation

The first phase of the cooperation is about establishing contact and getting to know the partners, the Learn phase. The aim of this phase is to find out whether there is serious interest in cooperation and a possible joint spin-off. In this phase, the problem or initial situation is analysed on the company side and the idea is developed on the start-up side and then both are brought together. The goal of the phase is to determine whether the idea and the solution are compatible and to decide whether there is serious interest in cooperation.

At the process level, both parties should therefore come together. Two different scenarios are possible in this regard: Either problems and solutions are developed separately and brought together (e.g., idea competitions, matching events) or the idea is already developed in cooperation (e.g., university projects).

For ideas that have been developed without the company, support is needed to find suitable cooperation partners. Loose formats for exchange can be offered, as well as structured formats in which a cooperation is accompanied by an intermediary role. In some cases, the idea itself already emerged in joint cooperation. In both cases, a pre-formulated process for the course of a cooperation with clear indications on duration and exchange of resources can bring transparency.

On the content level, problem and solution are considered, and a fit between the two is found (problem-solution fit). A critical preliminary examination of the idea before contact is established can help both founders and companies. To identify the problem-solution fit, templates and workshops are good tools. Such joint workshops could build trust between the parties early on. In addition, both parties get to know each other's way of thinking, from which benefits can be derived even if no fit is identified.

At the relationship level, there is a relaxed way of working together and getting to know each other. The focus is on building trust. This can be supported by facilitating intermediaries. The founding team itself can also be supported to identify common potentials, goals and knowledge gaps. If skills are lacking, workshops can be offered on the content level to compensate for the lack of knowledge. Contact persons for support at the content level (e.g., law, tax, marketing, sales) can also compensate for missing knowledge gaps.

During this phase, both parties should intensively discuss what their respective goals are in a cooperation and whether they derive mutual benefit from a cooperation. The goal of this phase is the decision to continue working together and the willingness to work out the concrete form. This can also take place in the context of agreeing to a process.

In the Match phase, the potentials of the cooperation are explored intensively in order to discover and use synergies together. In terms of content, the compatibility of the partners is examined on the one hand (partner fit) and the compatibility of the product on the other (product fit). However, the fit should not only be checked at a superior level, between the SME and the start-up, but also between the specialist department and the founding team. In this phase, the business model is also fine-tuned in order to test it in the later phase. To promote trust, the content-related aspects can be developed together in workshops to maintain interest and enthusiasm. Support that was already used in the Learn phase, such as the support of the founding team in the development of knowledge competence and team-building measures, can be further applied here. At the end of this phase, the decision is made to carry out a joint pilot project. Thus, the milestone is the signing of a cooperation agreement on the joint pilot. In particular, the objectives, rights and obligations of the parties and the duration are to be defined.

Within the Test phase, the product is tested in the market and the business model is validated accordingly (product-market fit). For this purpose, a prototype or MVP is first developed or the existing one is further developed. On the company side, the agreed resources are made available. The duration of this phase is defined in advance in the cooperation agreement so that a clear framework is created. At the end of this phase, the goals set in advance are used to evaluate the results and decide whether and how to continue. The pilot phase can be supported through exchange with the network. Mentors can also help to motivate and support the team on a regular basis (e.g., weekly).

The Partner phase is the goal of the process: a joint long-term cooperation. However, this can look different, which is why the concrete contents of the phase can differ greatly. Even if both partners agree at the beginning that they want a joint spin-off, this can change during the cooperation. The process ends at this point, as it transitions into a new type of collaboration. At the same time, all participants remain part of the network and can continue to exchange ideas at further events. Even if the cooperation ends, the network can still be used to continue the exchange in the future. At the content level, the market launch is now planned, and the concrete form of the cooperation is worked out.

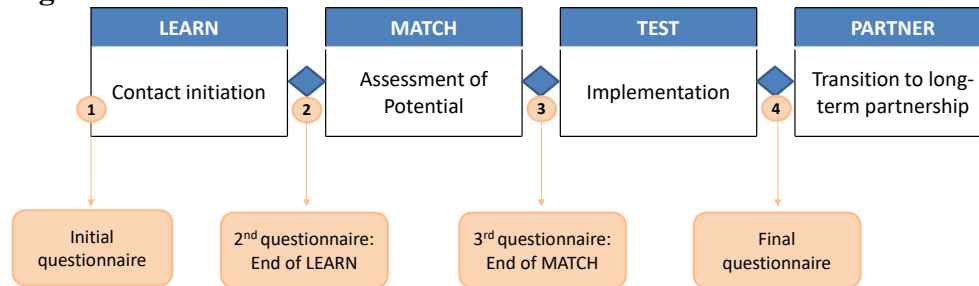
For evaluation purposes, it is suggested to use the process in the context of a cooperation initiation. By using the process model and the assistance mentioned above, participating SMEs and founders can provide further conclusions on the research topic. A purely theoretical evaluation within the framework of workshops would be another possibility, but deeper conclusions can be drawn through the actual use of the process, since the developed model and its support are actually used.

The aim of the evaluation is to find out whether the developed cooperation process supports cooperation between start-up teams and SMEs and to what extent the support options are seen as helpful. The Evaluation therefore focuses on the later. Furthermore, it evaluates to what extent the need for support is met by the provided assistance.

In order to be able to assess the development of the attitudes of the founding teams and SMEs over the course of the cooperation process, questionnaires will be made along the process. Figure 9 illustrates the process accordingly. Expectations and reflections can be mirrored through an initial and final questionnaire, as well as during the milestones.

A standardised questionnaire is recommended, which allows for partially open questions.

Figure 9. Evaluation Process



Source: Own illustration.

Discussion and Limitations

The developed cooperation process can be used in the context of initiating contact between founding teams and SMEs to bring clarity into the process and thus accelerate it. The process was designed in such a way that it can be used both as part of institutional support and as an aid for unaccompanied cooperation.

In the survey of the companies, the different fits were mentioned as important points in the process and also as challenges. Here it could be investigated how strongly cooperation success is influenced by the different aspects. An evaluation of success factors in the selection of suitable partners has already been carried out in other fields.

The process can also be applied by adapting it to other departments and types of cooperation. The central point here is to define in advance what is to be achieved within the framework of the cooperation, from which the content-related aspects can be derived. In this way, the superordinate process according to Learn-Match-Test-Partner can be used to systematise the respective process and to identify own support possibilities in the process.

This type of cooperation is rarely encountered in practice. The majority of respondents had no experience of such cooperation. Therefore, no investigation could take place regarding specific success factors, as there was not enough information available. An explorative research approach was chosen, which by its nature is not suitable to falsify hypotheses that have been established, but rather to establish new hypotheses. In this respect, the reference and impact model can be seen as a collection of hypotheses that can and should be examined in greater depth in further research.

Reference and impact models are only able to represent the actual initial situation to a limited extent. It should be noted, for example, that there may be far

more interrelationships between the individual factors. The relationships in this model were raised to an abstract level and thus a focus was set.

Conclusion

This research resulted in a cooperation process, which assigns the identified support possibilities to the individual phases. The process is divided into the four phases of Learn-Match-Test-Partner, during which the intensity of the cooperation increases.

Numerous support options for cooperation emerged from the analysis. For support in organization and planning, identification of suitable partners, aspects ranging from tools such as templates, access to networks to accompaniment of the process by external or internal facilitators were identified. To balance power imbalances, mentors, networks and moderation in meetings were added. In this context, the role of an intermediary can take on more tasks than mere mediation. The necessary qualities for this were also identified next to the need for support on the part of the founding teams in finding a team and form.

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The Role of Financial Inclusion on Economic Growth in Sub Saharan African (SSA) Region

By Masoud Mohammed Albiman^{*} & Hamad Omar Bakar[±]

Recently, financial inclusion through improved access within SSA region has increased and at a faster rate compared to other regions. By estimating panel data on 45 countries between 2004 and 2017, using Generalized Method of Moments (GMM) method, this study examined whether financial inclusion through improved access contributed positively on economic growth. The study examines both linear and non-linear effects of financial inclusion using three different indicators including financial inclusion index. The results reveal that, financial inclusion promotes economic growth. Our results are robust irrespective of upper middle income within SSA region. The need to design policies that widen accessibility and sustain financial inclusion is rather important, as it improves economic growth, development and reduces poverty within SSA region.

Keywords: SSA region, financial inclusion, GMM, nonlinear and economic growth

Introduction

For the past two decades, SSA maintained economic growth rates of around 4.8% per year, placing the region among the top five of world's fastest growing economy (AfDB 2015, ECA 2015). However, the advantages were not inclusive and translated into tangible development (AfDB 2012, as cited in Makina and Wale 2019). Despite such positive trend, the region is still facing a myriad of socio-economic challenges including unemployment, national debts and extreme poverty (AfDB 2015, UNCTAD 2016). The population living in extreme poverty is still relatively high, compared to other regions.

In reports published several years ago, the percentage of people living on less than \$1.25 a day in SSA accounted for 41 percent of the population, more than double that of Southern Asia, which is 17 percent (UNCTAD 2016, World Bank 2007, 2016, IMF 2017). It means that the population living in extreme poverty has increased to 330 million, which is at least 50 million higher compared to the last decade. It represents 30 percent of the world's poor, an appalling number representing merely a region (UNCTAD 2016, World Bank 2007, 2016, IMF 2017). UNCTAD (2014) identified 25 percent of people in the SSA suffering from hunger and unable to afford basic facilities, making the region one of the greatest food-deficient regions in the world. The World Bank believes that there is still more than one billion people living below the poverty line in the world, made out

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of people in the SSA and South Asia.

Lack of financial inclusion is one of the reasons people are in such challenges. More than three-quarter of the population lacks access to financial services such as financial products, bank accounts, insurance and affordable and suitable loans. Financial inclusion is defined as the process whereby individuals and businesses have access to financial industry to meet their needs by using useful financial products and services, such as making transactions and payments, using credit facilities, saving accounts and insurance in a sustainable and responsible way. Through bank accounts, financial inclusive consumers can send, receive and store money. The financial sector facilitates day-to-day living and helps families and businesses make plans for many things including retirement and business strategies.

For a long time, the region relied on agricultural exports, foreign aids, domestic investment, foreign direct investment (FDI) and financial development for its economic growth. However, these need other complements to ensure sustainable economic development within the region. In the past decade, the financial sector was believed to have reduced saving gap and even promote trade openness. The financial sector was believed to have promoted economic growth and development through funds channeling from the surplus side (savers) to the deficit side (borrowers). Recently, after acknowledging macroeconomic challenges in developing countries, the policy makers and leaders are optimistic that financial inclusion is not just encouraging financial development. It has been claimed that financial inclusion is a key enabler of sustainable economic growth in developing countries (World Bank 2018).

Recently, there were several efforts by the international development community and policymakers to expand access of affordable financial services to the excluded population. It is estimated that the world economy could create extra savings of about \$157 billion if “unbanked” adults channel their informal savings into a formal financial system (Allan et al. 2013, as cited in Asuming et al. 2018). The governments of several countries initiated several programmes to increase financial inclusion. An increase in access to financial services to “unbanked population” is expected to improve financial conditions and living standards by creating financial assets that can generate income. This also helps to develop local economic sectors and in turn, diminishes income inequality at macroeconomic level.

Previous literatures on impact of financial inclusion grouped the impact into three categories, based on its main generation processes. The first category examines the role of micro credit, i.e., microfinance in rural areas (Jacoby 1994, Van Rooyen et al. 2012, Makina and Wale 2019). The second category involves micro level studies that are interested in the direct effect of financial inclusion per se on poverty and household income. This includes Burgess and Pande (2005), Ayyagari et al. (2013), Bruhn and Love (2014), Sanyal (2014) and the World Bank (2014).

In more recent years, several studies have emerged, examining financial inclusion effect on macro-economic growth using two main variables, the number of bank branches and the number of adult accounts. Most of these studies were done in Asia and other developing countries, but very few have been carried out in the SSA region. The studies include Pradhan et al. (2017), Sharma (2016), Kim et al. (2017) and Sethi and Acharya (2018). They found that financial inclusion

increases the poor's access to financial services, resulting in narrower gap in income inequality and lesser poverty (Beck et al. 2007, Demircuc-Kunt and Levine 2009).

Much evidence is still at individual and micro level (Demircuc-Kunt et al. 2017). Makina and Wale (2019) insisted that evaluations of micro finance activities such as savings and wealth are done more extensively in the SSA region, despite the still limited macroeconomic evaluations. The pronounced situation beleaguering SSA region makes empirical research exploring such linkage on SSA's economic growth more vital than it needs to be in other regions.

There are several macroeconomic studies of financial inclusion in the SSA region such as Andrianaivo and Kpodar (2012), Makina and Wale (2019) and Inoue and Hamori (2016). Other studies by Zins and Weill (2016), Chikalipah (2017) and Asuming et al. (2018) were only interested in examining the determinants of financial inclusion within the SSA region. Some researchers attributed this limitation to lack of long-time data on measures of financial inclusion which were only more available and taken seriously after the US subprime crisis (Makina and Wale 2019, Sahay et al. 2015). Moreover, the Millennium Development Goals (MDGs) which only started in 2000, acknowledged its importance then. Besides, determinants of economic growth and inequality require decades of data, it takes a while to compile, before any study can be initiated using them.

This paper took the study of financial inclusion further, taking into consideration non-linear behavior of financial sector and examining whether excessive financial inclusion may have an impact on the economy. Previous literatures suggest that financial inclusion has linear positive relationship with economic growth, but is this regardless of the size of financial inclusion? Could excessive efforts on financial inclusion results in wastage or an exponential effect on growth? This question is of our interest, given the information by the World Bank (2018) that financial inclusion is increasing rapidly in the SSA region.

The possibility that too much financial access result in wastage of resources may happen on both side; (a) the demand side; consumers may be involved in unproductive entrepreneurial activities and personal unproductive consumption, affecting their saving and (b) the supply side; banks may experience an increase in cost of providing ATMs and bank branches but demand on the financial services does not match the effort put in.

Both effects may be more pronounced in the African region due to social challenges faced by the population. In terms of gender inequality, women are less connected to financial service compared to men (Asuming et al. 2018, World Bank 2019). Higher illiteracy rates and poverty also remain as a main hindrance of financial inclusion (AfDB 2015, UNCTAD 2016, Ouma et al. 2017). Previous authors argued that, Africans still prefer to save through informal and traditional ways, limiting profits that can be expected from the banking sector.

Several empirical literatures acknowledged the existence of negative non-linear relationship between finance and economic growth (Law et al. 2017, Law and Singh 2014, Cecchetti and Kharroubi 2012). The problem of negative non-linear effect of finance on growth is more pronounced in low-income economies

such as the SSA region (Cecchetti and Kharroubi 2012, Law et al. 2017). The non-linear effect of finance may cause a rise in moral hazards and misuse of business credit for personal consumption and unproductive activities (Law and Singh 2014).

Financial inclusion is acknowledged by the AfDB as one of the building blocks for the Ten-Year Strategy spanning 2013-2022. SSA region makes a useful case study for this. The new evidence will bring into focus, the role of financial inclusion, to under developed financial system in the SSA. This evidence can contribute to policy formulation, avoidance of wastage of resources, maximization of success and identification of the best channels for economic growth and development in order to reduce income inequality within the SSA region.

This study differs from other past literatures in several aspects. Firstly, we used a large sample of 42 SSA countries and the most recent data. Also, we used three different financial inclusion access namely Automated Teller Machines (ATM) per 100,000 adults, Commercial Bank branches per 100,000 adults and its index termed Financial Inclusion Access Index (FIA), which was developed by the IMF.

The use of Financial Inclusion Index is very important to capture real and general impact, which most previous studies left behind (Chakravarty and Pal 2013). Its multidimensional nature, involving various institutions with different sizes and activities, increases accuracy (IMF 2016). This paper is divided into five main sections. The first is the introductory while the second explains the trend of financial inclusion in the SSA region compared to other regions. The third section details literature reviews, both theoretical and empirical, while the fourth details empirical methodology. The fifth section presents the discussion of the results and interpretation including both linear and non-linear approaches. The last section provides conclusion and recommendations for policy formulations.

The Rise of Financial Inclusion

Financial inclusion now becomes the main target of the World Bank Group's Universal Financial Access (UFA) 2020 initiative. Financial inclusion has been identified as an enabling tool for 7 of the 17 Sustainable Development Goals in 2016. The World Bank Group considers it a key to reducing extreme poverty and boosting shared prosperity and a more inclusive economic growth (World Bank 2014, IMF 2014, Ouma et al. 2017). The G20 is also committed to bring financial inclusion worldwide. This is made possible through saving enablement and borrowing to the poor, investment in education and entrepreneurial activities.

Since 2010, more than 60 countries have either launched or developed a national strategy and 55 more made commitments to financial inclusion (World Bank 2018). These meant that nations are bringing together telecommunications, financial regulators, education and other relevant parties in the effort to promote financial inclusion which may help pace a fruitful reform.

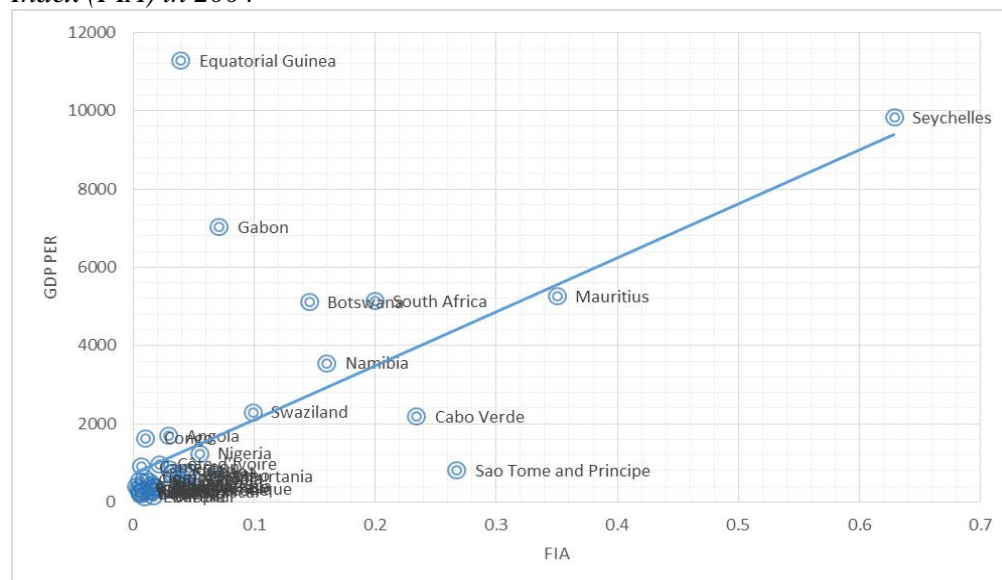
According to the report by World Bank in 2018, population living below the poverty line around the world makes up more than one billion people. More than

three-quarter of the population, women and men alike, lacks access to financial services such as bank accounts, insurance and loans. Kendall et al. (2010) estimated that, adults with bank accounts in the world were about 6.2 billion. The world adults without bank accounts in developed countries stood at 19 percent, whilst that in developing countries stood at a whopping 72 percent.

In the SSA region, it was estimated that, about three-quarter of the adult population did not hold a bank account (World Bank 2014). Also, it was reported that, in the SSA region, almost 80 percent of the adult population lacks access to basic financial services (Demirguc-Kunt et al. 2014). Having said that, in the SSA region, adults that hold bank accounts increased to 34% in 2014 from 24% in 2011, while access to credit increased to 6 percent, up from 4.8 over the same period (Demirguc-Kunt et al. 2014). Recent progress on financial inclusion is encouraging, especially in Latin America, Asia and Africa, but the numbers say otherwise (World Bank 2018). Despite these improvements, the formal financial system in Africa is still not very inclusive (Beck et al. 2015).

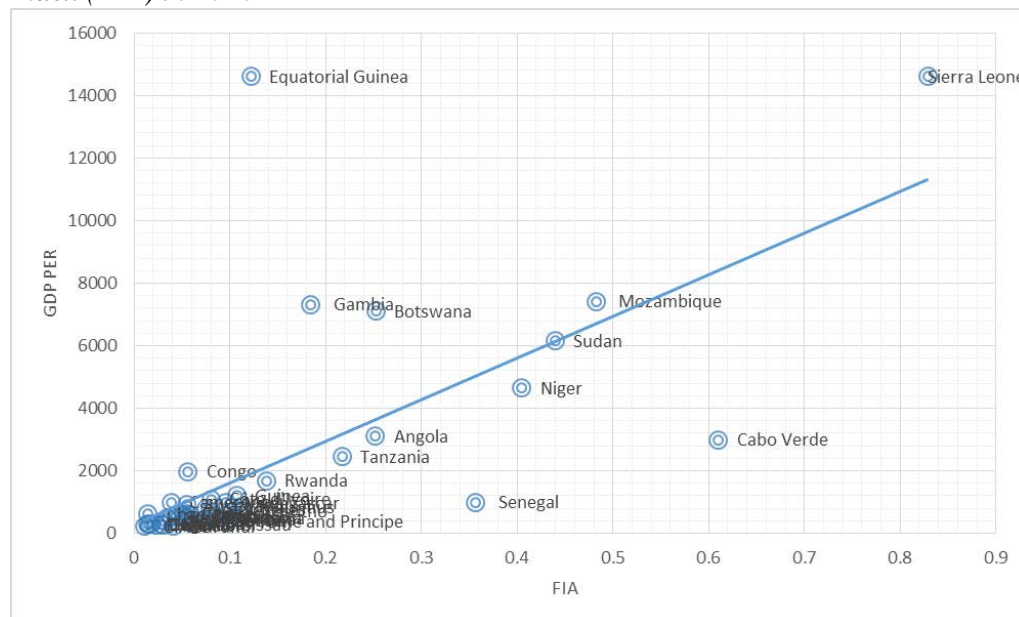
Figures 1 and 2 show positive relationships between economic growth (GDP per capita) and Financial Inclusion Index (FIA) in 2004 and 2016.

Figure 1. *The Relationship between GDP per capita (USD) and Financial Inclusion Index (FIA) in 2004*



Source: Author's calculation from IMF online database (2016).

Figure 2. *The Relationship between GDP per capita (USD) and Financial Inclusion Index (FIA) in 2016*



Source: Author's calculation from IMF online database (2016).

Literature Review

Theoretically, financial inclusion has a direct relationship with income inequality and macroeconomic growth. However, the World Bank (2008) observed a less clear-cut relationship between them. Entrepreneurial activity has long been a function that is able to direct funds into better and productive wealth (Banerjee and Newman 1993, Demircuc-Kunt and Levine 2009). Besides, access to formal financial services in developed economies have long been established. Thus, to link financial inclusion to growth in these economies, is a predicament. However, the situation is different in the case of developing economies, as the bulk of the adult population still lacks access to basic financial services (Ouma et al. 2017).

Through account ownership, people can easily access other financial products such as credit and insurance, invest in education or health, start and expand businesses and manage risks which may, in turn, improve their quality of lives. Sharma (2016) suggested that, financial inclusion helps build country's financial structure, hence economic growth and development. Thus, financial exclusion leads to the stunted growth and development (Sharma 2016). It is proven difficult to develop an economy when financial exclusion persists.

Fanta and Makina (2019) emphasized inclusive financial system as a pre-requisite to inclusive growth. They claimed that inclusive financial services ensure availability, accessibility and usage of formal financial services to all "unbanked" population. According to the United Nations (2006) in Fanta and Makina (2019), financial inclusion plays two important roles in economic development: (1) ensuring access to a range of formal financial services to the customers, from small credit and savings services to insurance and pensions services; and (2)

ensuring access to more than one financial services provider, creating competitions among the services providers.

The empirical literature can be grouped into three main generation processes. The first group examines the role of micro credit – micro financing in rural areas in terms of savings and education. The second looks into the direct effect of financial inclusion per se on poverty and household income. The third group is the most recent, examining the effect of financial inclusion on macro-economic growth using measurements such as bank branches and account penetration.

The first group of micro finance studies emerged due to the belief that it is the best step to curb poverty in the SSA region. The introduction of microcredit was carried out for a long time in the SSA region as a mean to promote financial inclusion. Most of the researches were divided into financial and non-financial impacts. By financial impacts, they meant effects in savings accumulation, income, wealth accumulation and expenditure while non-financial impacts are those affecting nutrition, housing, job creation, health and social cohesion. Van Rooyen et al. (2012) looked at the financial and non-financial effects of micro finance on households. Their results were rather inconclusive although Jacoby (1994) did conclude that, children with financial constraints face earlier withdrawal from education.

Burgess and Pande (2005) had evidence that, increasing bank branches in India gave a significant effect in reducing poverty in rural India. On top of that, World Bank (2014) reported an increase in access to saving and basic payments increases innovation, job creation and growth, as a result, reduces poverty to households. In another study, it was found that a financially empowered woman brings positive results to their families (Sanyal 2014).

For the second group, Bruhn and Love (2014) concluded that, increasing bank branches which are a mean of financial access to low-income individuals results in expansion of many economic activities, which in turn, improves employment and income level. Having said that, Ayyagari et al. (2013) who conducted a similar study in 15 Indian states, looking at financial depth and bank branches penetration in 1983-2005, had a mixed finding after 1991 (the period before financial liberalization). The selected variables had negative relationships with poverty with the effect is only positive among the rural self-employed.

The third group consist of macro level studies, either panel or cross sectional studies of a group of countries. Most of the literatures in this group acknowledge the positive effect of financial inclusion, using number of bank branches per 10,000 people and number of account users. Most of them relied on using specific variable of financial inclusion, ignoring the indices of financial inclusion. Also, it seems that most studies were concentrated in Asian countries while in the African region, the studies were more on determinants of financial inclusion rather than its effect on economic development. This group is further divided into three subsections, as follows:

Financial Inclusion has Direct Positive Impact on Economic Growth in Asian Countries

Kendall et al. (2010) included Micro Financial Institutions (MFIs), co-operative, credit institutions and finance companies along with banks in financial inclusion. They developed a measure for financial access for 139 countries worldwide. They concluded that the indicators of development and physical infrastructure are positively related to indicators of deposit accounts, loans and branch penetration. Also, Park and Mercado (2015) proved that, per capita income, demographic characteristics and rule of law significantly determine financial inclusion resulting in a significant reduction in poverty and inequality in Asian countries.

Rasheed et al. (2016) using GMM for 97 countries revealed financial inclusion has positive effect on economic growth in SAARC countries. In that same year, Pradhan et al. (2017) looked at insurance market penetration in promoting economic growth in ASEAN countries (1988-2012). The study confirms co-integration and numerous causal relations among the variables as well as the presence of short run bidirectional causality between insurance market and economic growth. Sharma (2016) utilized data surrounding 2004-2013, looking at the effect of various measures of financial inclusion on Indian economic development. They concluded that, an increase in bank penetration, availability of banking services and usage of banking deposits have positive correlations with economic development.

Kim (2016) suggested that, financial inclusion has a strong positive effect on economic growth of European Union (EU) and OECD countries, although the effect is much stronger in high fragility countries compared to low fragility countries. On top of that, Kim et al. (2017) claimed that in a GMM study (1990-2013), financial inclusion promotes economic growth in Organization of Islamic Countries (OIC) despite the disparity in level of financial inclusion among them. Sethi and Acharya (2018) too, examined the effect of financial inclusion on economic growth of 31 developed and developing countries between 2004-2010. They found a bidirectional causality between financial inclusion and economic growth and confirmed that financial inclusion promotes economic growth.

Dahiya and Kumar (2020) examined the impact of financial inclusion by using three dimension of financial inclusion usage, accessibility and penetration. Using panel data for the 2005-2017 period, they claimed a positive impact of financial inclusion on economic growth.

Financial Inclusion Affects Economic Growth with Conditionality

Previous studies acknowledge the positive effect of financial inclusion on economic growth. However, some studies, in 2015, started to warn about such over optimistic views. For example, Sahay et al. (2015), suggested that an increase in financial access by firms and households stimulates economic growth, but only to a certain threshold, after which, the effect would plateau or even be negative in some developed countries. They even warn that excessive and unregulated

financial access may risk financial stability. They cited increasing financial access, other than credit, enhances economic growth and financial stability. Sukmana and Ibrahim (2018), using quantile regression on 73 countries, suggested that, financial access reduces poverty only in countries with low income inequality. This implies that, in countries with high income inequality, increasing financial access may not be fruitful unless they improve on level of infrastructure.

Country Level Studies in African Region

Only a few studies in the region were interested in examining the effect of financial inclusion on economic development. Andrianaivo and Kpodar (2012), via GMM (1988-2007), utilized “deposits per 100 inhabitants and number of loans per 100 inhabitants” to assess financial inclusion effect on economic growth of 44 African countries. They reasoned that positive and significant effect of financial inclusion on economic growth only occur if the countries’ financial sectors are well developed. This paper is interested in examining the joint impact of financial inclusion and mobile phone penetration in stimulating economic growth, in the hope to overcome methodological limitations in other studies.

Makina and Wale (2019) suggested that, number of commercial bank branches per 100,000 people for the period 2004-2014 contributes positively to economic growth of 42 SSA countries. Inoue and Hamori (2016) estimated panel data on thirty-seven SSA countries between 2004 and 2012, and concluded that financial access has a statistically significant and robust effect on economic growth.

Other African studies were only interested in determinants of financial inclusion. Chikalipah (2017) was interested in examining determinants of financial inclusion of 20 SSA countries and it was found that illiteracy is a major obstacle to financial inclusion in SSA. Asuming et al. (2018) also analyzed the determinants of financial inclusion in 31 SSA countries within 2011-2014 period. They claimed that although financial inclusion has increased significantly since 2011, the distribution was not equal. Education level, gender, GDP and financial institutions are significant determinants of financial inclusion. Meanwhile, Zins and Weill (2016) used probit model on 37 African countries to look at determinants of financial inclusion and found that education and income level influence financial inclusion.

Emara and Mohieldin (2020) were also interested in the impact of financial inclusion in the MENA region. They also found a positive and significant impact of financial inclusion on economic growth. The most recent, Khan et al. (2021) examined, using panel data, the impact of financial inclusion on poverty, income inequality and financial stability between 2001-2019 for 54 African countries. They suggested that, financial inclusion reduces poverty, income inequality and improves financial stability.

Methodology

Theoretical Framework

The neoclassical growth theory suggested that, economic growth depends on advances in technology although technology level is an exogenous variable (Solow 1956). Meanwhile the theory assumed that, in steady state, both output per capita and capital stock per capita are fixed. So, the theory ignored the role of human capital and R&D in technology advancement. In response, Romer (1986) and Lucas (1988) developed the endogenous growth theory. The theory is based on the Cobb-Douglas production function, and rewritten as follows:

$$Y = \{ (AH^{1-\ell}, K^{\ell}) \} \dots\dots\dots(1)$$

Whereby “Y” refers to capital to economic growth, “A” to factor productivity, which depends on technological advancement, “H” to human capital or skilled labor force, “K” to capital stock and ℓ to elasticity of labor. The important lesson within this model is that capital stock would not diminish economic growth by itself due to the existence of technological efficiency and human capital and R&D. This is due to the presence of several factors such as financial sector, domestic investment, institutional quality and foreign direct investment fostering technology advancement.

In our case, we are more specific to the role financial sector plays on financial inclusion and economic growth. As suggested in financial economic literatures, the expansion of banking services such as account holdings, good financial infrastructures including ATMs and bank branches in remote areas promote entrepreneurial activities, induces savings, increases productivity and domestic investment.

As argued by Fanta and Makina (2019), inclusive financial services ensure availability and accessibility and usage of formal financial services to “unbanked” population. They went on to say that financial inclusion plays two important roles in economic development, ensuring access to a range of formal financial services from credit and saving to insurance and pensions to citizens and ensuring availability of a variety of financial service providers to promote competition, thus, reduces cost of service and boosts entrepreneurial activities.

Model Specification and Hypothesis Formulation

Looking at previous literatures (Andrianaivo and Kpodar 2012, Sahay et al. 2015, Inoue and Hamori 2016, Sethi and Acharya 2018) and based on endogenous growth theory, the following model was specified to examine the effect of financial inclusion on economic growth and income inequality:

$$\ln Y_{it} = \alpha + \beta_1 \ln Y_{it-1} + \beta_2 \ln FI_{it} + \beta_3 \ln INST_{it} + \beta_4 \ln HC_{it} + \beta_5 \ln TO_{it} + \beta_6 \ln DI_{it} + \beta_7 \ln FDI_{it} + \eta_{it} + \varepsilon_{it}$$

All variables were changed into log form to express them in percentage form. The symbols (i) implies cross sections or observations, in this case, presenting 42 countries. Time period is represented by (t) from 2004 to 2016. Since we were dealing with panel data the letter (η) represents unobserved panel specific effect of each country. The error term is represented by the symbol (ε), aimed to capture other factors influencing economic growth. The dependent variable is indicated by ($\ln Y_t$) representing economic growth of SSA countries, which is in the form of GDP per capita. There are seven main independent variables in this study. To describe the symbol ($\ln Y_{it-1}$) with coefficient β_1 , its lagged dependent variables were included to capture dynamic process within the equation included in GMM. They were expected to be either positive (divergence) or negative (convergence) and significant.

The expression $\ln FI$ with coefficient (β_2) represents financial inclusion indicators with each indicator estimated separately. Following several previous studies (Bruhn and Love 2014, Kendall et al. 2010, Rasheed et al. 2016, Sethi and Acharya 2018), it is expected that financial inclusion brings positive impact on economic growth. However, there are studies by Naceur and Ghazouani (2007) and Pearce (2011) and that show financial inclusion having a negative effect on economic growth. Other variables with their estimated coefficients were included in the equation to complement endogenous growth theory including institutional quality -INST (β_3), human capital -HC (β_4), trade openness -TO (β_5), domestic investment -DI (β_6) and foreign direct investment -FDI (β_7). According to the endogenous theory, all included variables are expected to contribute positively to economic growth.

Variables Description and Data Sources

In the context of financial inclusion, three variables were estimated in separate equations whilst the control variable was maintained. Financial inclusion can be measured in terms of (i) usage (ii) access and (iii) quality of financial services (Sharma 2016). However, in our case we are more concerned with access of financial services since it is still in infancy stage in the SSA region. Access to financial sector can be measured using these two variables: - Commercial Bank Branches per 100,000 adults, which reflects the degree of penetration of financial institutions (CBB) and Automated Teller Machines per 100,000 adult (ATM) which reflects ownership of accounts. The latter reflects ownership of accounts of people or firms at formal financial institutions. All data were collected from World Bank Indicators online database 2018.

Financial Inclusion Access index (FIA), which is a composite index prepared by the IMF (2016) online data base 2018, reflects two measurements of financial inclusion. The data for control variables were all collected from the World Bank (2018). Institutional quality was measured using the rule of law index³, while FDI

³See Law and Singh (2014).

was measured as ratios of country's FDI inflow to GDP. Trade openness was measured by ratio of sum of import and export over total GDP of the host country whereas domestic investment was measured by the value of fixed capital formation over GDP. The period collected (t) was from 2004 to 2016 (13 years). This was driven by data availability in the World Bank and IMF databases. Only 45 countries out of 51 SSA countries were selected due to data availability (Appendix A). South Sudan, Somalia, Saint Helena, Liberia, Comoro, and Djibouti had to be dropped due to inadequate data.

GMM as Estimation Method

As we are looking at the effect of financial inclusion on economic growth in the SSA region, we would like to note that, the relationship between finance and economic growth is not unidirectional and it could be one with a reverse causality. This may occur when economic growth increases the demand for financial services, or when there are significant reductions in poverty due to high economic growth, leading to more pressure on financial inclusion services. This relationship is simply known as endogeneity in the field of econometrics analysis and if it is not controlled, it can cause potential biases to the coefficients.

To address these potential biases, it is widely proposed that we use a dynamic panel estimator based on a GMM, developed to cover such specifications. The GMM was initially developed by Arellano and Bond (1991), and it was expanded to a system of equations that has instrument restrictions by Arellano and Bond (1995) and Blundell and Bond (1998). After computing GMM estimates using xtabond 2, J-statistics and Hausman tests, both were used to check if the instruments were not over identified and correctly specified. Also, we use GMM method due to the large value of N (n=45) compared to T(t=13) which is a very important condition of GMM so as to avoid over and under identification of instruments.

Discussion of the Results and Interpretation

Descriptive Statistics and Correlation

The descriptive statistics in Table 1, show that ATM has the highest mean value (ATM=0.14) while Financial Institution Access has the least mean value (FIA= -2.72). FIA is a more comprehensive data. It is usual to note that, financial inclusion is very low in SSA region due to small number of firms and entrepreneurs and high rate of poverty, rural population and illiteracy (Zins and Weill 2016, Chikalipah 2017, Asuming et al. 2018).

Among the control variables, human capital (HC) has the highest mean value (HC=13.98) with the lowest standard deviation (HC=1.68) compared to the rest of the control variables. FDI has the lowest mean value (FDI=8.26) and the highest standard deviation (FDI=2.56). Meanwhile, during the period, FDI was unevenly distributed in the SSA region.

Table 1. Descriptive Statistics for the Period (2004-2016)

Variable	Mean	Std deviation	Min	Max
Y	6.81	1.14	5.01	9.73
ATM	0.14	2.11	-6.51	5.43
CBB	0.12	1.84	-4.14	4.72
FIA	-2.72	1.10	-5.41	-0.19
HC	13.98	1.68	9.06	16.98
INST	0.22	0.26	-0.86	1.02
TO	-0.07	0.48	-2.17	1.11
DI	9.97	1.68	5.04	14.19
FDI	8.26	2.56	-12.21	12.92

Source: Calculations from STATA 14.

Table 2 demonstrates positive correlation between financial inclusion indicators (ATM, CBB, and FIA) against economic development (Y). The highest correlation is shown between FIA (FIA=0.77) and economic development. This provides a clear insight that there is a linear and positive correlation between financial inclusion and economic development in selected samples of SSA countries.

Table 2. Correlation Matrix for the Period (2004-2016)

	Y	ATM	CBB	FIA	HC	INST	TO	DI	FDI
Y	1.00								
ATM	0.47	1.00							
CBB	0.30	0.91	1.00						
FIA	0.77	0.78	0.64	1.00					
HC	-0.46	-0.31	-0.34	-0.42	1.00				
INST	-0.40	-0.26	-0.14	-0.44	0.34	1.00			
TO	0.44	0.17	0.06	0.34	-0.31	-0.30	1.00		
DI	-0.14	-0.19	-0.04	-0.15	-0.01	0.14	-0.004	1.00	
FDI	0.06	-0.12	-0.03	0.10	-0.09	-0.06	0.10	0.13	1.

The Estimated Results from GMM

Three separate models with three indicators of financial inclusion (ATM, CBB and FIA) were estimated. Firstly, the estimated regressions were from the problem of second order serial correlation –AR (2) since we failed to reject the null hypothesis. Then, the Hansen test proved that, the instrument has no over identification problem, thus no problem of endogeneity faced.

The result from Table 3 shows that, coefficient signs of all three indicators of financial inclusion are positive. However, only two indicators (FIA=0.012, CBB=0.006) are statistically significant. Meanwhile, despite the mean value of ATM being the highest, it was not statistically significant. The positive impact of FIA and CBB results is in line with our hypothesis, that financial inclusion drives economic development of the SSA region. Also, FIA, as a composite index of financial inclusion gives a clearer picture on the importance of financial inclusion. Its coefficient is stronger compared to CBB. On the other hand, using separate variables, as in previous studies, results in bias or unsatisfactory conclusion. For

example, from the results, although FIA consists of CBB and ATM, only CBB remains positive and significant while ATM shows insignificant effect on economic growth.

Table 3. *The Long Run Impact of Financial Inclusion on Economic Development in the Main Period (2004-2016)*

Specifications	Dependent Variable : GDP per capita					
	One-step System- GMM			Two-step System-GMM		
	(1)	(2)	(3)	(4)	(5)	(6)
Independent variables	Coefficients	Coefficient	Coefficients	Coefficient	Coefficient	Coefficients
Constant	-0.149(0.00)*	-0.167(0.00)	-0.106(0.03)*	-0.152(0.00)*	-0.140(0.01)*	-0.092(0.05) *
Y(t-1)	1.011(0.00)*	1.010(0.00)*	1.005(0.00)*	1.001(0.00)*	1.008(0.00)*	1.005(0.00)*
ATM	0.001(0.67)	-	-	.002(0.31)	-	-
CBB	-	0.006(0.00)*	-	-	0.006(0.00)*	-
FIA	-	-	0.009(0.02)*	-	-	0.012(0.00)*
HM	0.003(0.26)	0.005(0.09)**	0.004(0.08)**	.003(0.08)**	0.004(0.07)**	0.003(0.17)
FDI	-0.001(0.51)	-0.001(0.40)	-0.001(0.26)	-0.001(0.00)*	-0.001(0.00)*	-0.001(0.00)*
INST	0.011(0.45)	0.010(0.53)	0.024(0.05) *	0.009(0.15)	0.011(0.09)**	0.038(0.00)*
TO	-0.001(0.13)	-0.008(0.21)	-0.004(0.48)	-0.004(0.65)	0.002(0.77)	-0.002(0.78)
DI	0.006(0.00)*	0.004(0.00)*	0.005(0.00)*	0.005(0.00)*	0.004(0.00)*	0.006(0.00)*
AR(1)	-5.49 (0.00)*	-5.51 (0.00)*	-4.41(0.00)*	-1.86(0.06)**	-1.87(0.06)	-2.94(0.00)*
AR (2)	-1.28 (0.20)	-1.38(0.17)	-2.46 (0.01) *	-1.08 (0.28)	-1.18(0.24)	-1.21 (0.23)
Sagan value	71.69(0.09)	240.63(0.00)	328(0.00) *	239.13(0.00)	240.63(0.00)	328(0.00) *
Hansen value	**	*	-	*	*	*
	-	-	-	38.45(1)	39.26(1)	36.68(1)

Figures in parentheses () denote p values except Hansen test. *and **imply significance levels at 5 and 10 percent respectively. AR(1) and AR(2) are serial correlation values at first and second order respectively.

If a bank branch is efficient in delivering formal banking services to customers, it can promote economic development. The same applies to SSA region, the recent increase in CBB implies that there is efficiency in bank branches delivering formal banking services. The positive effect implies that, financial inclusion enhances flow of money and resources allocation in rural areas which, in turn, lead to better economic development (Sharma 2016). Also, our results support previous literatures such as Inoue and Hamori (2016) and Makina and Wale (2019) who both suggested that the number of commercial bank branches per 100,000 people for the period 2004-2014 has positive contribution to their economic growth. This happened by relaxing constraints which stimulate economic activities, such as trade and transactions, between producers and financial institutions, as well as by reducing funding constraints.

Control Variables

Human capital (HC), institutional quality (INST) and domestic investment (DI), all have positive coefficients and in many cases statistically significant. This is in line with our expectation and the endogenous theory. Human capital (HC) effect ranges from the lowest of 0.003 to the highest value of 0.004. This is in line with several empirical literatures such as Andrianavo and Kpodar (2012) and Kim et al. (2017). Institutional quality (INST) lies between 0.11 and 0.038. The positive effect of Domestic Investment (DI) ranges from 0.004 to 0.006. In contrast, Foreign Direct Investment (FDI) has negative coefficients with values of about - 0.001 in all three model specification. This is in contrast with endogenous growth

theory. However, some empirical studies argued that, this may happen due to the absence of good economic environment in the host country (Azman-Saini et al. 2010). The impact of trade openness (TO) also has mixed results.

Robustness Test

To ensure that our results are robust, we took into account the hypothesis that financial sector has strong impact on higher income countries. We ran another regression, excluding six upper-middle income countries indicated by the World Bank (2019). This helped us to ensure that our results become more sensitive, without the higher income countries. These countries are defined by Gross National Income (GNI) between \$3996 and \$12375. We considered them as 'outliers' and we regressed only 39 countries whilst maintaining similar time period (T=13, N=39). The SSA countries listed as outliers are Botswana, Equatorial Guinea, Gabon, Mauritius, Namibia and South Africa. The results are robust as they remain positive and significant for CBB and FIA while ATM remains positive but insignificant (Table 4).

Table 4. *The Long Run Impact of Financial Inclusion on Economic Development in the Main Period (2004-2016)*

	Two step SGMM		
Model Specifications	(1)	(2)	(3)
	Coefficient	Coefficient	Coefficients
Independent variables			
Constant	-0.099(0.25)	-0.045(0.60)	-0.016(0.85)
Y(t-1)	0.002(0.00)*	0.988(0.00)*	.996(0.00)**
ATM	0.001(0.45)	-	-
CBB	-	0.006(0.03)	-
FIA	-	-	0.015(0.00)*
HC	0.005(0.00)*	0.003(0.33)	0.005(0.08)**
INST	-0.005(0.09)**	0.012(0.09)**	0.012(0.50)
TO	0.04(0.079)	0.002(0.82)	0.007(0.53)
DI	.002(0.04)**	0.002(0.05)**	0.005(0.00)*
FDI	0.001(0.19)	0.001(0.23)	0.001(0.00)*
AR(1)	-1.65(0.09)**	-1.65(0.09)**	-2.58(0.01)**
AR(2)	-1.02(0.30)	-1.08(0.28)	-1.13(0.26)
Sagan value	224.66(0.00)*	226.38(0.00)**	335.54(0.00)**
Hansen value	33.37(0.89)	36.28(0.95)	34.46(0.95)

Non-Linear Effect of Financial Inclusion

In order to examine whether 'too much' financial inclusion may still promote economic growth, we carried out a non-linear regression by squaring the variables (Table 5). It is the best method to adopt, as suggested by Law and Singh (2014). The results suggest, doubling bank branches per 100,000 (CBB=0.027) and Automated Teller Machine (ATMs=0.007) still give positive and significant impact on economic growth. In contrast, Financial Inclusion Access (FIA) index gives a

negative yet insignificant effect. Although we acknowledge that FIA is the best and accurate measure of financial inclusion, it may still be inconclusive to believe that doubling financial inclusion has a positive effect on economic growth. However, we can still argue that doubling CBB and ATM has a positive and significant impact on economic growth. Our positive non-linear effect is against previous literatures that claimed negative non-linear effect (Law et al. 2017, Law and Singh 2014, Cecchetti and Kharroubi 2012). It is worth mentioning, that they relied on financial development indicators such as credit to private sector but not measures of financial inclusion per se. The presence of positive non-linear effect of financial inclusion implies that doubling the number of bank branches and ATM in rural areas is still very important to the SSA economies.

This may be true, due to the fact that, financial inclusion is still new in the region, despite its rapid increase. The mean values of financial inclusion range between 0.12 and 0.14 for both CBB and ATM. On the other hand, Financial Institution Access index (FIA), which is supposed to provide a general picture of financial inclusion, has a negative mean value (FIA=-2.72). Albeit its comprehensiveness, we must take into account the very low level of financial inclusion in the SSA region. It was argued that, the region still owes it to the small number of firms and entrepreneurs to hold bank accounts, faces extreme poverty, high population and illiteracy (Zins and Weill 2016, Chikalipah 2017, Asuming et al. 2018).

Table 5. *Non-Linear Effect of Financial Inclusion on Economic Development in the Main Period (2004-2016)*

Specifications	Dependent Variable : GDP per capita					
	One-step SGMM			Two-step SGMM		(6)
	(1)	(2)	(3)	(4)	(5)	
Independent variables	Coefficients	Coefficient	Coefficients	Coefficient	Coefficient	Coefficients
Constant	-0.110(0.03)**	-0.089(0.09)**	-0.0747(0.13)	-0.048(0.43)	-0.096(0.02)**	-0.037(0.62)
Y(t-1)	0.911(0.00)*	0.907 (0.00)*	0.851(0.00)*	0.920(0.00)*	0.905(0.00)*	0.901(0.00)*
ATM	-0.0140(0.00)*	-	-	-0.012(0.00)	-	-
ATM ²	0.002(0.00)*	-	-	0.002(0.00)*	-	-
CBB	-	0.018(0.05)**	-	-	0.029(0.00)*	-
CBB ²	-	-0.005(0.06)**	-	-	-0.007(0.00)*	-
FIA	-	-	0.002(0.84)	-	-	-0.002(0.81)
FIA ²	-	-	0.001(0.95)	-	-	-0.006(0.65)
HM	0.002(0.30)	0.004(0.86)	0.002(0.28)	-0.004(0.89)	0.007(0.69)	0.006(0.85)
FDI	-0.004(0.61)	-0.005(0.54)	-0.005 (0.46)	-0.005(0.03)**	-0.005(0.00)*	-0.005(0.00)*
INST	-0.013(0.34)	0.009(0.52)	0.021(0.06)**	0.001(0.95)	0.001(0.89)	0.022(0.00)*
TO	-0.010(0.08)**	-0.0081 (0.19)	-0.001(0.81)	-0.005 (0.41)	-0.005(0.27)	0.008(0.25)
DI	0.002(0.08)	0.004(0.00)*	0.003(0.00)*	0.003(0.00)*	0.004(0.00)*	0.003(0.00)*
AR(1)	-5.44 (0.00)*	-5.52 (0.00)*	-4.45(0.00)*	-1.86(0.06)**	-1.87(0.06)**	-2.96(0.00)*
AR (2)	-1.57 (0.11)	-1.36(0.17)	-2.50 (0.01) *	-1.26 (0.20)	-1.14(0.25)	-1.24 (0.21)
Sagan value	268.58(0.0) *	263.45(0.0) *	360(0.00) *	268.58(0.00) *	263.45(0.00) *	360.67(0.00) *
Hansen value	-	-	-	40.73(0.89)	38.08(0.85)	38.34(0.9)

Figures in parentheses () denote p values except Hansen test. *and **imply significance levels at 5 and 10 percent respectively. AR(1) and AR(2) are serial correlation values at first and second order respectively.

Conclusion

Sub-Saharan Africa has struggled for a long time with poverty and income inequality, lagging behind in terms of economic growth. However, since the turn of the century, the region's economic growth has increased at a faster rate compared to global growth rates. Also, despite having low financial inclusion, in recent years, financial access has increased at a faster rate compared to other regions. By estimating panel data on 45 countries from Sub-Saharan Africa between 2004 and 2016, this study examined whether financial inclusion through improved access to formal financial services can contribute positively to economic growth of this region.

It was found that all three indicators of financial inclusion have positive effect on economic development of the SSA region but only Commercial Bank Branches (CBB) and Financial Institution Access (FIA) are statistically significant. This signifies benefits gained by the SSA from financial inclusion. It is also worth noting that, the Financial Institution Access (FIA) index has a strong effect compared to separate indicators, namely the CBB and ATM.

This means that a combination of ATM and CBB, represented by the index, plays a significant role in boosting economic development. In case of non-linear effect, we found that financial inclusion index (FIA) did not prove a positive return on economic growth. Therefore, we are still not in a position to conclude that doubling the level of financial inclusion gives positive returns to the economy. Therefore, the governments of SSA countries need to work together to work on strategies developed by international organizations such as the IMF and the World Bank to encourage financial inclusion to all corners of the region in order to improve economic growth and development.

The need to design policies that increase accessibility, thus promote financial inclusion is crucial. Efforts to make formal financial services and products readily available by increasing network of commercial branches in all corners of Africa is a sure start to financial inclusion. On top of that, the governments in SSA should give support to their banking sectors by reducing hindrances and bottlenecks in terms of access to formal financial services, improving literacy rate and encouraging use of mobile technology. Although expanding the network of commercial branches and improving accessibility for customers may increase burden of operating cost, but there is a need to balance between profit making and public interest.

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Appendix A*List of SSA Countries Used in Analysis*

- | | | |
|------------------------------|-------------------|-----------------------------|
| 1. Angola | 16. Ethiopia | 31. Niger |
| 2. Benin | 17. Gabon | 32. Nigeria |
| 3. Botswana | 18. Gambia | 33. Rwanda |
| 4. Burkina Faso | 19. Ghana | 34. Sao Tome and Principles |
| 5. Burundi | 20. Guinea | 35. Senegal |
| 6. Cabo Verde | 21. Guinea-Bissau | 36. Seychelles |
| 7. Cameroon | 22. Kenya | 37. Sierra Leone |
| 8. Central Africa | 23. Lesotho | 38. South Africa |
| 9. Chad | 24. Madagascar | 39. Sudan |
| 10. Comoros | 25. Malawi | 40. Swaziland |
| 11. Congo | 26. Mali | 41. Togo |
| 12. Côte d'Ivoire | 27. Mauritania | 42. Uganda |
| 13. Democratic Rep. of Congo | 28. Mauritius | 43. Tanzania |
| 14. Equatorial Guinea | 29. Mozambique | 44. Zambia |

Note: Due to unavailability of data some countries were not included; includes: South Sudan, Somalia, Comoro, Djibouti, Liberia.

Hesiod's *Works and Days* as an Economics Textbook

By Gregory T. Papanikos^{*}

The aim of this paper is to examine the whereabouts of Hesiod's life (days) and the most of his important works which is entitled, "Works and Days". The first part of the paper examines Hesiod's life and education. It is claimed that he was educated by his father who knew the Aeolian dialect as he migrated from Aeolia of Asia Minor to Boeotia of Central Eastern Greece. The second part of the paper is devoted to Hesiod's masterpiece, "Works and Days". I have claimed elsewhere (Papanikos 2022a) that Hesiod was the first known economist who wrote using a poetic form instead of prose because this was the means to satisfy the need of memorizing the whole text. The "Work and Days" apart from its literary value, has a very practical (didactic), unparalleled value which makes it the first economics textbook ever known in history. The book is then presented as being organized into twenty chapters to emphasize that it could have been used as an introductory economics didactic text.

Keywords: Hesiod, Askra, Works and Days, Economics

Introduction

Hesiod's books, life, birthplace and education are very controversial. In many cases, myths are inseparable from reality. The only contemporary information comes from Hesiod himself, especially from his book, *Works and Days*. As I have already mentioned in Papanikos (2022a), these controversies have their historical merit, but in no way affect the analysis of his book. Hesiod did not provide an autobiography. Whatever he wrote about himself and his family were like case studies to support some of his arguments.

Those who wrote about Hesiod's life or social, political and economic conditions were not contemporary. The first reference about Hesiod's life is made by Herodotus approximately four-hundred years after Hesiod's death. Many contemporary scholars may not realize that today the difference of four centuries is very small compared with Herodotus' four-hundred-year difference with Hesiod. Today we have many sources over the last four-hundred years, which was not the case in Hesiod's and Herodotus' times.

Thus, it is really very difficult to say anything about Hesiod's life and whereabouts without some use of imagination and good common sense. Within this spirit, the purpose of this paper is twofold. Firstly, I present whatever information is available on Hesiod's days (life), which includes place of birth and death, dates of his lifespan, family, conditions of his place of living (village), and, of course, his education. I use the myths and whatever appears to be real, but, most importantly, I utilize my own common sense to critically analyze some writings

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about these issues considered far from truth. Secondly, I briefly list all publications which in the past were allegedly associated with his name, but I extensively present only one, which is of my interest here: Hesiod's book of *Works and Days*.

There are many ways to present *Works and Days*. Researchers of Hesiod's *Works and Days* have concentrated on a few verses, upon which wrote entire papers or even books. These works contain information about his life as well as his village. What is of interest in this work here is that economic historians and historians of economic thought have cited Hesiod's *Works and Days*. Those considered as most important were critically reviewed by Papanikos (2022a).

In addition, many scholars have analyzed *Works and Days* as a whole from many perspectives such as philosophy, political science, literature, linguistics, education, etc. However, I do not know any economist who presented the entire book as an economics textbook. My approach here considers the entire manuscript as an economics textbook. I have organized *Works and Days* into twenty chapters, which I think will make sense to an economist. This method keeps the flow of the book (lines), the same as in the original. I briefly present each "chapter" by making specific references to contemporary economic analyses if needed. This is not the best way of presenting Hesiod's important contributions to economic analyses. A better method could be used, which would consist of re-organizing the material of the book according to specific themes which are relevant to what contemporary economists can feel familiar and comfortable with. This latter method is not applied here.

As mentioned above, my approach here is to use all available information, but most importantly to use an economist's common sense which might not be the same as the one which has been employed by classicists and even by some economic historians of the ancient world. To explain what I mean, many writers have presented Hesiod as being a poor farmer and shepherd living in a barren village of Boeotia and the Muses inculcated him to start writing about the *Works and Days*. A cursory reading of the *Works and Days* and knowing the geography of Hesiod's village and the number of people he employed in his farm (if what he describes as a farm business is his own, which most probably is the one that lead to the quarrel with his brother), then common sense tells us that: (a) Hesiod's village was and is very productive; (b) his property was very large, and would still be considered very large even with today's standards of land ownership in the area; and (c) Hesiod was very well educated. These are some of the stylized facts which this paper aims at explaining, using the information derived primarily from *Works and Days*, my own common sense, and in some cases, my own experiences even though it sounds awkward, but I think it is not.

The paper is organized into seven sections, including this introduction. The next section looks at Hesiod's scatter information on his life. Section three speculates on Hesiod's education. Section four examines Hesiod's village economy of the eighth century BCE or even earlier. Section five briefly presents what has been allegedly said that Hesiod wrote and section six presents his masterpiece on *Works and Days* in twenty different parts called "chapters," which is consistent with the economic ideas discussed in each one of them. Conclusions are given in the last section.

Hesiod's Life

Hesiod lived almost three thousand years ago from a time that no other work has survived that could have provided some evidence on Hesiod's life and/or the economic, social and political conditions in his area. The only other written work of the period is Homer's *Iliad* and *Odyssey*⁴. Therefore, we know nothing about Hesiod from any contemporary source apart from his own autobiographical notes in the *Works and Days*. Thus, all writers of Hesiod's life including his place of origin have relied on Hesiod himself or from writers who wrote about him a few centuries, or even more than a millennium, later. In this section, I will talk about a number of issues which have created their own literature on Hesiod. Specifically, I will talk about Hesiod's: (a) family migration; (b) birthplace; (c) lifespan and death; and (d) family. I devote a separate section of this paper to talk about Hesiod's village economy.

The Migration of Hesiod's Parents to Askra

The first controversy starts with Hesiod's father. Hesiod himself stated that his father (and most probably his mother) migrated from the town of Kyme in Asia Minor and settled in Askra⁵, a small village in the area of Boeotia located in the central-eastern mainland of Greece, close to Athens. According to Hesiod himself in *Works and Days*, his father⁶,

came, some time ago, here, through a long sea-trip,
leaving behind the Aeolic Kyme, in a black ship,
not to avoid richness and wealth,
but the dreadful poverty, which Zeus gives to men
and next to Helikonos, in a deplorable town, settled,
Askra, bad in the winter, terrible in the summer, never
good.

ὅς ποτε καὶ τῇδ' ἦλθε, πολλὸν διὰ πόντον ἀνύσας,
Κύμην Αἰολίδα προλιπὼν, ἐν νηὶ μελαίνῃ
οὐκ ἄφενος φεύγων οὐδὲ πλοῦτόν τε καὶ ὄλβον,
ἀλλὰ κακὴν πενίην, τὴν Ζεὺς ἀνδρεςσι δίδωσιν·
νάσσατο δ' ἄγχ' Ἑλικῶνος διζυρῇ ἐνὶ κόμῃ,
Ἄσκρι, χεῖμα κακῇ, θέρει ἀργαλέῃ, οὐδέ ποτ' ἐσθλῇ.
[635-640]

Proclus, a Neo-Platonist philosopher of the fifth century CE, gave a reason of the family migration: their debt. It is not clear though whether he left to avoid the debt payment and/or to find a better place to repay the debt.

The reason that his father had chosen Askra is not known either and one can speculate that Hesiod's father had known the area from his previous seafaring as a merchant. The problem with this explanation is that Askra is relatively far away from the sea. It is quite possible that his father was the son of some old migrants who left central Greece in the ninth century BCE and settled in Asia Minor and therefore he knew the area or even he inherited some property. Alternatively, he

⁴I have examined in Papanikos (2021a, 2021b) some issues which relate to these two great ancient works.

⁵According to the Lexicon (p. 140) by Hesychius from the fifth century CE, Askra means fruitless oak (see <https://bit.ly/3z30E61>), which might be the reason why many scholars considered Hesiod's village as being very poor. The truth is that the oak trees in Askra were and are very productive. For the only thing that we are sure today is whether Hesiod's description of his village was really true or was an overdramatization of the scarcity problem as explained in Papanikos (2022c).

⁶I translated into English all quotes from ancient Greek texts cited in this paper.

found a piece of land to buy and then through hard work increased the size of it so much so as to divide it into two pieces and leave them as inheritance to two of his sons. The area is not as infertile as Hesiod depicted in his book as this is further discussed below. In other words, Hesiod's father returned to his ancestors' homeland. Nothing is known about his mother.

In the *Works and Days* there is a reference to his ancestors as coming from an aristocratic family: *δῖον γένος* [299] which can be another reason why his father decided to migrate from Aeolia once he went bankrupt. The family might have felt ashamed from the forced lower status. This is reinforced by Hesiod's statement mentioned above that his father left because he was not rich and lacked wealth. This also supports all those who consider wealth (profits) as determining class structure and is contrary to what many (economic) sociologists, like Max Weber and Karl Polanyi, have argued: that status was affected by non-economic characteristics and it was an objective by itself. By the way, fair wealth accumulation as a human objective is an integral part of the *Works and Days*. Self-sufficiency and avoiding famine are the minimum objectives of any family contemporary to Hesiod.

Birthplace

Hesiod does not mention whether he was born in Askra or migrated with his family from Asia Minor. In *Souda*, a lexicon-encyclopedia of the tenth century CE, there is a reference to Hesiod that he was born in the city of Kyme in Asia Minor and migrated with his father and mother to Askra in his youth.

One might assume that Hesiod was born in Asia Minor because he did not like his village at all; probably because he was comparing it with his childhood years in Asia Minor before the family's bankruptcy. This is a common-sense sentiment for any child. However, this presupposes that he left at an age that he could remember his years in Kyme (five and older). Then, if he could remember, he would have definitely recalled the long sea trip that brought him from Asia Minor to Boeotia, and therefore his trip to Euboea would not have been the first one. If he was old enough to remember his life in Kyme, he might have said something in his writings.

I conclude, therefore, that Hesiod, most probably, was born in Askra or he was brought to Boeotia as an infant. Thus, his dislike of Askra must be related to his family influence and nostalgia which left a better place (Kyme) to come to what Hesiod considered a very poor and backward village (Askra). When I lived in New York in the late 1970s, I met many people from my village⁷, which up to 1960s, looked very much like Hesiod's village. Greeks from that area had migrated in the 1950s or earlier to New York because they were very poor in Greece. Their children, about my age in the 1970s, were born and lived all their lives in New York. They disliked New York. They compared it with their parents' village, which they very rarely, if ever, visited. I was surprised by this reaction, but then I found out that they were raised with their parents' nostalgia for their village.

⁷I will use Hesiod's approach of giving elements of my autobiography to support my interpretations of Hesiod's writings because I consider them very relevant.

However, very few who attempted to permanently return to their parents' villages had failed miserably. This is a different story, but an interesting one on its own.

Lifespan and Death

According to Hesiod, he lived all his life in that small village. He never travelled by the sea, with only once exception to the nearby island of Euboea⁸. In his own words:

I never travelled on a boat in the wider sea,
but only once when I went to Euboea from Avlida

ποτε νηί γ' ἐπέπλων εὐρέα πόντον,
εἰ μὴ ἐς Εὐβοίαν ἐξ Αὐλίδος,
[650-651]

This is not to be interpreted that Hesiod did not travel at all. Most probably Hesiod travelled a lot in the nearby Greek mainland. He should have been a frequent visitor of the nearby important cities of Boeotia, including the nearby city of Thespieae, which was the closest city to his village. Thespieae was also the home of the basileis (kings and judges). Hesiod mentioned basileis so many times in his *Works and Days*. In Thespieae many festivities, artistic and athletic contests took place, of which is referred to by Pausanias. One may then assume that Hesiod participated as a contestant as well as a spectator.

The lifespan of Hesiod's life is also controversial. Most probably, he was born in the latter part of the eighth century BCE and died in the middle of the seventh century BCE. Aristophanes in *frogs* put in Aeschylus' mouth the contributions of the four well known poets in ancient times:

Because people got education from poets
Because from the beginning useful the brave
poets have become.
Orpheus favored festivities and refrain from
killing.
Mousaios taught us about illnesses and
oracles, Hesiod the works on land, the time of
the fruits, the farming; the divine Homer
who knows where he owns his fame and
honor, taught how to set up armed men.

ταῦτα γὰρ ἄνδρας χρηὴ ποιητὰς ἀσκεῖν. σκέψαι γὰρ ἀπ' ἀρχῆς
ὥς ὠφέλιμοι τῶν ποιητῶν οἱ γενναῖοι γεγένηται.
Ὅρφευς μὲν γὰρ τελετὰς θ' ἡμῖν κατέδειξε φόνων τ' ἀπέχεσθαι,
Μουσαῖος δ' ἐξακέσεις τε νόσων καὶ χρησμούς, Ἡσίοδος δὲ
γῆς ἐργασίας, καρπῶν ὥρας, ἀρότους· ὁ δὲ θεῖος Ὅμηρος
ἀπὸ τοῦ τιμὴν καὶ κλέος ἔσχεν πλὴν τοῦδ' ὅτι χρήστ' ἐδίδασκεν,
τάξεις ἀρετὰς ὀπλίσεις ἀνδρῶν.
[Aristophanes, *Frogs*, 1030-1036]

If the order of the names is an indication of their chronology, then Orpheus was the oldest. Mousaios is next who some considered as either a student and/or son of Orpheus. Aristophanes then mentioned Hesiod which makes him older than Homer. Herodotus dates Hesiod 400 years before his time, or about late ninth century BCE, and a contemporary of Homer. In his *Histories* (II, 53), Herodotus stated:

I think that Hesiod and Homer existed 400 years
before me and no more

Ἡσίοδον γὰρ καὶ Ὅμηρον ἡλικίην τετρακοσίοισι
ἔτεσι δοκέω μεν πρεσβυτέρους γενέσθαι καὶ οὐ
πλέον

⁸Hesiod himself stated in the *Works and Days* that the reason of his trip was to participate in a poetry contest where he won the first prize. Pausanias in the second century CE made a reference that this Prize was at display in the mountain of Helicon.

The emphasis of no more, *οὐ πλέον*, might set the earlier limit and leaves it open, even for Herodotus, that both or one of them lived in a later period. As some authors have claimed⁹, Hesiod outperformed Homer in a poetry contest, which allegedly took place during Hesiod's times on the island of Euboea. As stated above, Hesiod mentioned that this was his first and only sea trip, but he does not mention Homer as his competitor in the contest. Alcidas, a fourth century BCE sophist, is cited as the first who mentioned that the contest was between Hesiod and Homer.

There are many stories to his death, but all of these come much later. In the fifth century BCE, Thucydides (3, 96) wrote in a passage that:

Inside the temple of the Nemean Zeus, where as it is said the poet Hesiod died in this city, as it was foretold by the oracle that in Nemea this will happen to him

ἐν τοῦ Διὸς τοῦ Νεμείου τῷ ἱερῷ, ἐν ᾧ Ἡσίοδος ὁ ποιητὴς λέγεται ὑπὸ τῶν ταύτη ἀποθανεῖν, χρησθὲν αὐτῷ ἐν Νεμέᾳ τοῦτο παθεῖν,

Thucydides mentioned as “it is said” (*λέγεται*) which can be interpreted that he himself questioned the whole story because he gave no source. Thucydides was committed to write history (truth), not myths and stories that provide pleasure to the masses, but useful knowledge to be used by future generations¹⁰.

After his death and given his popularity, it was natural that many stories existed about his death. One famous one, for the “masses” of people, was that two brothers killed Hesiod because he corrupted their sister. Pausanias rejects this story because it is against what he believed and stated in his writings.

There were two cities which claimed that Hesiod had been buried. The story that Thucydides mentioned was well known in ancient times. Hesiod was warned by the Delphi Oracle not to visit Nemea in the Peloponnesus because it would be there that he would die. However, as was always with the Delphi Oracle, their verdicts had always more than one interpretation. Hesiod's death occurred in Oenoe of Locris, an area in central Greece where there was a Temple of Nemean Zeus mentioned by Thucydides.

Hesiod's Family

As mentioned above, Hesiod revealed the origin of his family as coming from *δοῖον γένος* [299]. This has many interpretations which relate to the genealogy of his family. In the Souda Lexicon of the tenth century CE, there is a reference to Hesiod's family from unknown sources. It is stated that,

Hesiod, from Kyme, young, he was brought up by his father Diou and his mother Pycimedes in Boeotian Askra. It is said in genealogies to be the son of Dios, the son of Apelles, the son of Melanopous, who some say is the grandfather of Homer the founding father, making Hesiod and Homer first cousins and each a descendant of Atlas.

Ἡσίοδος Κυμαῖος νέος δὲ κομισθεὶς ὑπὸ τοῦ πατρὸς Δίου καὶ μητρὸς Πυκιμήδης ἐν Ἀσκρι τῆς Βοιωτίας. γενεαλογεῖται δὲ εἶναι τοῦ Δίου, τοῦ Ἀπελλίδος, τοῦ Μελανώπου, ὃν φασὶ τινες τοῦ Ὀμήρου προπάτορος εἶναι πάππον, ὡς ἀνεψιαδοῦν εἶναι Ἡσίοδου τὸν Ὀμηρον, ἐκότερον δὲ ἀπὸ τοῦ Ἀτλαντος κατάγεσθαι.

⁹See West (1967) and Uden (2010).

¹⁰This applied to pandemics as well which Thucydides provided an excellent narrative as I explained in Papanikos (2020) and compared it with the current pandemic of COVID-19.

I have already mentioned that there are many views about Hesiod's birthplace and of his migration to Askra. The above quote traces Hesiod's family origins to the mythical Titans, giving even more kudos to his genealogy, which is reinforced by his alleged relation to Homer.

It can be inferred from Hesiod's writings that his family, once in Askra, was rich with a lot of property because there would be no reason to quarrel with his brother over their inheritance. Hesiod said that he had one brother, but there is no specific reference to other brothers and/or sisters. Most probably he mentioned Perses only because he had the quarrel over their inherited property.

Hesiod never made a clear indication of his own wife and children. Most probably he did have a family, otherwise he would never have preached for a family if he did not have one. He did make a reference to a son in the *Works and Days* [271], but possibly this was a general aphorism about justice and injustice. Hesiod did state the optimal age for a man (around thirty) and woman (four years after puberty) and that the man has the responsibility to teach his wife the proper means of living.

Concluding this section, it is important to state that the many myths which surround Hesiod's life and whereabouts is of great interest to historians and all those who like such stories. However, the most important issue is his education. Hesiod was the first known scholar who wrote a book about three thousand years ago which can be considered as the first didactic economics book. The depth of the concepts developed in the *Works and Days* and the richness of his Greek vocabulary suggest that Hesiod received a very good education along with his indisputable superb talent. His education is examined in the following section of this paper.

Education

Professor Frederick John Teggart (1947, p. 45), whose work was an inspiration for Arnold J. Toynbee, noted that, "Hesiod is the first of European authors: the first poet, the first writer on religious subjects, the first moralist, the first authority on the practice of agriculture"¹¹.

I have argued in Papanikos (2022a) that Hesiod should also be considered as the first economist and the first author of an economics textbook. This assumes that he had received a very good education before he started writing his books.

On education, Hesiod made a note that there are three types of people: (a) talented who learn by themselves; (b) good learners who learn from others; and (c) useless who do not learn from anybody. Nobody today will ever dispute the diachronic truth of this motivation to learn. I am sure he believed that he belonged to the first type of learners, but benefited from learning from others.

As is the case with all other aspects of Hesiod's life, little is known about his education. Many scholars of the Hesiodic works refer to him as a poor peasant and

¹¹Teggart did not consider Homer a European writer because he was born in Asia Minor. As mentioned, Hesiod might have been born in Asia Minor as well. In this case, even Hesiod cannot be considered a European scholar. However, both can be considered as first world scholars.

shepherd who unexpectedly, daydreaming perhaps, received a message from the nine Muses of Knowledge that he was on a mission to write a cosmogony and his “Erga” (*Works and Days*). However, as Rand (1911, p. 137) rightly wondered more than a century ago, “Indeed, by what right do we call Hesiod a peasant at all? He is at least a cultivated peasant, master of Aeschylean theology and of a highly artificial vocabulary, which I question if Boeotian peasants understood. In the present poem, he is to all appearances, a land-owner, a gentleman farmer. He ploughed, but so did a certain noble in early Roman history. He also wrote poetry, as Cincinnatus did not do.”

This solves another riddle of whether he was indeed the author of the *Works and Days*, or he simply put down in writing a long oral tradition of his time. No oral tradition can produce such a masterpiece of using such a rich Greek vocabulary¹².

Hesiod's invocation to the muses in the beginning of his *Works and Days* can have many interpretations, but one I prefer is the following. Muses were the protectors of educated people, i.e., the protectors of arts and sciences. Education at the time required good memory and the Muses were the daughters of the goddess of Mnemosyne (memory). Reading Hesiod, it becomes very clear that these poems cannot be written or orally produced by someone who is illiterate. It is evident that Hesiod had a very good command of the Greek language and therefore a very good education. Of course, he definitely must have had a very good memory along with a superb imagination to remember or invent so many parables, myths and stories.

Where did he receive such an excellent education? I risk saying that most probably he received his education from his father. Cook (1989, p. 171) was wrong when he stated that, “It may be objected that, if Hesiod had learnt *aoide* from his father, he would have said so; but it would hardly have been relevant information or even perhaps proper, since it is the Muses he credits with his teaching”.

Firstly, Hesiod credits the Muses for his talent as is common practice with many people who owe to God whatever talent with which they were born. Secondly, Hesiod would never have mentioned something that is so trivial even for contemporary Greek and many other cultures: families spend time and money for their children's education. It is considered self-evident that the parents provide food, shelter, clothes and teach their children how to speak which Hesiod never mentioned, but he did mention the respect children ought to give their parents. Why? Undoubtedly, because they had raised them and this includes their education. In writing this paper, I owe many things to my mother and father, but I would have never mentioned here if I did not want to make this point. I never put

¹²This reminds me of a personal story. When I held a senior policy making position, I was hiring young excellent students from the best Greek universities to assist us in writing policy-making reports. Of course, there were many reactions as is always the case of any initiative, small or big. In one case, someone accused me that I wrote up the report myself to prove that the young scholars are valuable. Then one of his “colleagues” told him that this was not the case because the Greek in the report were excellent, and that I myself could never write such elegant Greek. He was right. Not anybody could write the *Works and Days*, but someone who was a superb master of the Greek language. Hesiod most probably was such a scholar.

in my acknowledgements thanks to my parents because it is so self-evident. They are always there even if I do not mention them.

Hesiod was living in a small village; therefore, it was unlikely that good pedagogues could be available to teach the young Hesiod to read. I assume that his family had the money to pay for his education because they were (very) rich for the standards of his time, otherwise Hesiod and his brother Perses would never have fought over an inherited property. Even by today's Greek standards, a farmer from Boeotia would be considered rich, actually very rich, if he could employ the labor and capital that Hesiod used in his family business estate at the time. Unlike Solon, born more than a century later in Athens, we learned from Hesiod himself that he never travelled outside of his own little village or area. Solon got his education from travelling, even though his prime motivation was commerce and not so much education. Solon of course was living in cosmopolitan Athens in the 6th Century BCE and not in a remote village of the 8th Century BCE. Even today this distance creates inequalities in education. The question, "who educated Hesiod?" is then easily answered: his father was his teacher, who most probably spoke the Aeolian Greek dialect.

This also solves the puzzle of why in the *Works and Days* some words can be traced to the Aeolian Greek dialect and not in the local Boeotian Greek dialect. Where did he learn the Aeolian words from? Most probably he learned them from his parents. For example, he mentioned the month of January-February not with the Boeotian name, but with the Ionian one, "Μῆνα δὲ Ληναῖωνα" [504]. Only his father could have taught him these words and/or dialect in Askra¹³. If his father was coming from a rich/aristocratic family and he travelled for trade purposes, pretty much like Solon had done two centuries later, Hesiod's father would have obtained a good education for the eighth century BCE standards. Being in Askra and having plenty of time in off-season periods, he could teach the young Hesiod everything he knew. And that education was sufficient for such a talented student like Hesiod.

Hesiod's Village Economy

This section provides a descriptive overview and the specific characteristics of Hesiod's village¹⁴. Hesiod used the economy of his village as a testing ground of

¹³Following my personal New York story already mentioned, I was impressed by the second-generation youngsters whose parents came from my Greek village who used words which are used locally in my area and how well they kept our local village dialect which includes a characteristic accent, i.e., all central mountainous Greeks still today speak with an accent which does not pronounce the vowels between two consonants. From the accent, even today, you can tell which area of Greece someone is coming from. Of course, this is true for any part of the world that speaks the same language, but with a different accent or even words, which is what defines a dialect.

¹⁴Many compare Hesiod's economy with any contemporary economy and conclude either that the ancient economy was similar or different in which case a different model is not needed. However, the comparison must be made between Hesiod's economy and today's economy of his village, or at least of the economy of the mid-twentieth century CE. I have discussed this issue in Papanikos (2022a).

his economic theories. A brief introductory outline of this economy is provided here.

The geography of Askra is very important. It belongs to the prefecture of Boeotia and even today has less than one thousand people. It is located in the south slope of the mountain Helicon in the Valley of Muses to which Hesiod refers. The village has its own myth which is eloquently presented by the second century CE traveler Pausanias. The eighth of his ten travel reports of Greece are devoted to Boeotia where he explicitly mentions Hesiod's village Askra. The village was well known due to Hesiod's legacy even though one millennium had passed. Contrary to what Hesiod described in his *Works and Days*, Pausanias described the area as being very fertile with trees and bushes which were excellent to feed goats.

From all Greek mountains, Helicon is the most fertile full of fruitfully trees; and the bushes of *andraxnou* provide the goats with the sweetest fruit

ὁ δὲ Ἑλικὸν ὄρων τῶν ἐν τῇ Ἑλλάδι ἐν τοῖς μάλιστα
ἐστὶν εὐγεῶς καὶ δένδρων ἡμέρων ἀνάπλεως· καὶ οἱ
τῆς ἀνδράχου θάμνοι παρέχονται τῶν πανταχοῦ
καρπὸν αἰεὶν ἡδιστον
[Pausanias, *Boiotika*, 28.1]

Given that the same location is still fertile and produces many agricultural products, I agree with Pausanias' description that the area was rich and the land fertile which now makes perfect economic sense why Hesiod's father had chosen the area. In Pausanias words, "from all Greek mountains," Hesiod's father chose to invest in the most productive and not barren land. This makes perfect economic sense and most probably the land was not, relatively speaking, cheap. Following this note, Pausanias gives the story (myth) about Askra and its relation to the Muses. Also, he makes a note that at the time he visited the village, second century CE, there was a castle and nothing else worth mentioning.

In Askra there was a castle I saw and nothing else important that I can bring in my mind

Ἄσκηρς μὲν δὴ πύργος εἷς ἐπ' ἐμοῦ καὶ ἄλλο οὐδὲν
εἰλεῖτο ἐς μνήμην
[Pausanias, *Boiotika*, 29.2]

Of course, there were other archaic villages and cities that were much richer than Askra. No population statistics exist and Hesiod gave no numbers. Things became worse for the historian because the town was destroyed by a war and the surviving people were forced to move to the nearby city of Orchomenos. Archaeological evidence is limited and does not provide any significant evidence. I guess that the people of Askra were no more than two thousand at the maximum, a typical population for a mountainous Greek village even in modern times.

The transportation and communication infrastructure were not well developed and remained like this up to the mid of the last century. It is common sense to assume that the transportation and communication infrastructure of the eighth century BCE was no better than the ninth century CE infrastructure. An assumption I make is that it remained the same because people used the same transportation and communication means as that of Hesiod. They also used the same tools for cultivating the land.

The life of Hesiod extends over the beginning of the archaic years; between eighth and seventh centuries BCE. If it is assumed that he was born in the eighth

century BCE, then definitely, within this period, Hesiod had lived and had co-existed with other people from whom he learned the living condition of the ninth century BCE, which is the period coinciding with the end of the Dark Ages in Greece¹⁵. Thus, Hesiod knew because he could have heard much of the ninth century BCE from his fellow villagers. This is important because Hesiod most probably lived in a transition period from a self-sufficient economy of the early ninth century BCE to the beginning of a new era of greater division of labor and seafaring. This greater division of labor was depicted in Table 1 of Papanikos (2022a).

For the population size and the transportation infrastructure of this small village, there was a surprisingly large division of labor and diversification of production. Askra's economy depended upon agriculture (wheat, grapes-raisins, honey, etc.), forestry (timber for building houses and ships), stockraising (sheep, goats, oxen and donkeys), many artisans, but especially coppersmiths who had their own shops which were also used as gathering places like the modern café in Greek villages, or the barbershops in classical Athens, a textile and apparel production (clothes and shoes), and artists (singers, instrument players and various performers). Most probably Hesiod himself was making money as a rhapsodist, but he never mentioned this.

As in many Greek villages today¹⁶, people were most likely holding many jobs, and to a certain extent, they were making their own clothes and food which characterize a self-sufficient economy at the level of the family business or estate like the one described in *Works and Days* and not at the level of each individual. Production took place using various types of labor and servants, different types of capital and equipment, and of course land and storage rooms.

In sum, Hesiod's village was a typical village of the entire Greek mountainous mainland, which is located far from the sea. The economic life is clearly described by Hesiod's *Works and Days* which does not differ much from similar villages up to the mid-twentieth century CE.

During my youth, we did not have electricity in my village and our household was living close to a subsistence level. The old people of my villages were telling stories about their economic situations similar to what Hesiod described in his *Works and Days*. Thus, we can make a strong assumption that Hesiod's economic analysis is based on fundamental facts he observed in his village economy.

Hesiod had the talent of a great economist; he developed good economic analyses and then tested the derived hypotheses (conclusions), using the data generation process which was at his fingertips: the economic reality of his village. I believe that Hesiod developed a general theoretical conceptual framework, which included important axioms of human behavior which were excellently decorated (masked) by metaphysical reasoning such as his cosmogony, which in *Works and Days*, takes the concrete shape of a theoretical economic analysis. Hesiod does not provide an economic analysis for his village economy, but for the economies of all

¹⁵In my village of the mid-twentieth century CE there were people who remembered stories from their grandfathers of the 1821 Greek War of Independence. These people were wearing the same clothes: fustanella, as the 19th century Greeks did in small villages.

¹⁶In Papadopoulos and Papanikos (2005), the employment alternatives of vinegrowers were examined.

villages and cities. Most probably he considered his village a typical one that permitted him to make generalizations for the entire humanity and societies.

Hesiod's Writings

Works and Days is considered as the most authentic book from all Hesiod's writings even though many consider that some verses were added by others in the long history of the text. Pausanias' work on *Boiotika*, written in the latter part of the second century CE, wrote:

Boeotians who live close to Helicon refer to the tradition that Hesiod did not write anything else, but the *Works and Days* and from this they removed the preamble about the muses claiming that the poem started with the Strives; they showed me the poem written on a lead, close to the area of the spring, but they were worn out because of time.

Βοιωτῶν δὲ οἱ περὶ τὸν Ἑλικῶνα οἰκοῦντες
παρειλημμένα δόξῃ λέγουσιν ὡς ἄλλο Ἡσίοδος
ποίησεν οὐδὲν ἢ τὰ Ἔργα: καὶ τούτων δὲ τὸ ἐς τὰς
Μούσας ἀφαιροῦσι προοίμιον, ἀρχὴν τῆς ποιήσεως
εἶναι τὸ ἐς τὰς Ἑρίδας λέγοντες: καὶ μοι μόλυβδον
ἐδείκνυσαν, ἐνθα ἡ πηγὴ, τὰ πολλὰ ὑπὸ τοῦ χρόνου
λελυμασμένον.

[Pausanias, *Boiotika*, 31.4]

However, even Pausanias himself stated that there is another opinion that Hesiod wrote many other books. The tenth century CE Souda lexicon mentioned a number of books written by Hesiod.

Theogony, Works and Days, Shield, Catalogue of Female Heroines in five books, Dirge for a certain Batrachus, his lover, Concerning the Idaean Dactyls, and many others.

Θεογονία, Ἔργα καὶ Ἡμέραι, Ἀσπίς, Γυναικῶν
ἡρώϊων κατάλογος ἐν βιβλίοις ε', Ἐπικήδειον εἰς
Βάτραχόν τινα, ἐρώμενον αὐτοῦ, περὶ τῶν Ἰδαίων
Δακτύλων, καὶ ἄλλα πολλά.

Many controversies exist about the authorship of these books. What is important for my work here is not who wrote the books, but the fact that one of them is an economics textbook written close to 3,000 years ago. Hesiod has been credited as the author of many books; more than ten. However, the most important ones are *Works and Days* and *Theogony*. Hesiod's cosmogony, the creation of the world, is outlined in *Theogony*, but is of little interest for my economic analysis of Hesiod's work, even though I use it. *Works and Days* is the grand work which is the focus of this paper here. I present the structure of this book in detail in the next section, but one should always keep in mind, as I have already mentioned many times above, that all the controversies surrounding Hesiod's works are irrelevant to my arguments here. However, in what it follows, I mention some of them.

In the relevant literature of the *Works and Days* the date can be established with some certainty. If the poem was continuously revised, as might have been the case within the long oral tradition, then one might argue that the poem's time coincided with the adult life of Hesiod. Even the story of the prize won in Euboea might be a late addition by Hesiod himself. Thus, one cannot say with certainty that Hesiod did not recite some early versions of *Works and Days* itself and then added new verses to show that he won the prize. In other words, the argument that he recited verses from *Theogony* may not be so strong even though it still is quite probable.

The great majority of researchers of Hesiod's works consider him as contributing to many disciplines, but very few to economics literature, albeit, as shown in Papanikos (2022a), some economic historians and historians of economic thought did mention him as one of the contributors. For example, some have observed in Hesiod's works elements of political philosophy (Bartlett [2006]); religion (Beall [2004]); morality and justice (Claus [1977]); Teggart [1947]); didactic poetry (Heath [1985]); education (Papastephanou [2008]) and an agricultural manual (Nelson [1996]).

In my work here, I consider *Works and Days* as being an economics textbook. In the next section of this paper, I present the structure of the *Works and Days* as an economics textbook.

Works and Days: An Economics Textbook

The debate over the authorship of *Works and Days* is irrelevant to our discussion here. *Work and Days* exists and has been used to teach (educate) students throughout the centuries. This will not change if Hesiod (a) wrote the book or not; (b) copied an oral tradition or was an original work of his own; (c) his brother or even himself existed or not; (d) lived in the ninth, eighth or seventh century BCE; (e) born and died in a specific place.

All these have a great historical interest and justifies why so many papers and books have been written on these subjects, but themselves have little or no economic interest. Actually, the economics textbook argument made here is reinforced if the *Works and Days* was the received economics view of the eighth century BCE, which someone had put down in a written form. This is exactly what a good textbook should do and *Work and Days* is a very good textbook of economics.

Works and Days is written as a poem of 828 verses or about 6,000 words, a relatively small book. If it was written today in prose, it would have been a very good academic paper or concise student notes of a thirteen-week lectures. At the time, it was used for teaching. This is the reason Hesiod's work is called didactic poetry. It is a masterpiece in the world of literature, but also a masterpiece in the world's economics literature and first known textbook of economics. The influence of the book was tremendous and its legacy survived into our modern world. Even comic writers like Aristophanes summarized Hesiod's book very precisely in one-and-a-half verses by emphasizing its economic (productive) aspect:

Hesiod though
the works on land, the best season for fruits, and
farming

Ἡσίοδος δὲ
γῆς ἐργασίας, καρπῶν ὥρας, ἀρότους
[Aristophanes, *Frogs*, 1033-1034]

The knowledge extracted from the *Works and Days* can be classified as an economic analysis at a textbook level. Contemporary economic textbooks use axioms, theories, metaphors and parables to teach the principles of economic analysis. This paper argues that Hesiod's book was the first to use the same

didactic tools and methods to teach applied economics and business analysis. Given that the basic economic problems are diachronic, the same issues were analyzed in Hesiod's work as in contemporary, introductory economic textbooks.

Another way of viewing Hesiod's *Works and Days* is as an eloquent study of an annual and monthly time allocation of human economic activities constrained by natural (includes geography and climate) and ethical principles. In economic jargon, Hesiod's book looks at the allocation of scarce human resources to maximize a utility function which has many elements, but the most important one is the accumulation of wealth (profits) subject to the constraints imposed by nature and social values (ethics).

In this section, I present the structure of the book as has been preserved for almost three millenniums. My suggested structure here will make the book more attractive to my fellow economists even though it is not the best way of presenting the book from an economist's point of view. This should be considered as the first step of presenting *Works and Days* for the benefit of economists.

In this section, I organize *Works and Days* into twenty chapters, keeping the sequence of the text as in the original. All the chapters have an important economic meaning or concept as indicated by the titles I gave to them. Lekatsas' adaptation of the *Works and Days* to contemporary Greek language has organized the work into eleven chapters or sections which is a very useful way of presenting the material of the text, but it was not an economic one. West's English translation in 1988 of the *Works and Days* is done in prose without any segmentation, following a similar approach by Mair's translation of *Works and Days* in 1908.

I have divided *Work and Days* into twenty "chapters" and titled each one of them according to their economic meaning and included concepts. These chapters are the following:

1. Introduction [1-2]
2. The Uncertainty of Life [3-10]
3. Fair and Unfair Economic Competition [11-33]
4. The Economic Corruption of the Executive and Judiciary [33-41]
5. Scarcity [42-46]
6. The Metaphysical Explanation of Scarcity [47-53]
7. A Theory of Economic History [105-201]
8. Justice, Peace and Economic Growth [202-285]
9. Work and Individual Economic Prosperity [286-320]
10. Wealth Creation (Accumulation) and Ethics [321-341]
11. The Micro-Environment of Family Business [342-375]
12. Family Business and Inheritance [376-380]
13. The Annual Production Process of the Family Farm Business I [381-535]
14. The Production of Clothes [536-563]
15. The Annual Production Process of the Family Farm Business II [564-581]
16. Leisure Time [582-596]
17. The Annual Production Process of the Family Farm Business III [597-617]
18. The Economics of Seafaring [618-694]
19. The Economics of Family, Friendship and Social Behavior [695-764]

20. A Monthly Economic Calendar of Works and Social Activities [765-828]

The rest of this section provides a summary of the twenty chapters of Hesiod's works. For brevity, and to avoid unnecessary repetitions, I do not cite the exact verses of Hesiod's textbook.

My approach here is to make some indicative comparisons of Hesiod's chapters with contemporary textbook approaches to economics. I refrain from citing the obvious textbook correspondence between Hesiod and any microeconomics or macroeconomics textbook. I use economic jargon because this is the only language most economists understand. Unfortunately, many economists not only do not speak other than their mother tongue, but they do not understand their own language vocabulary if it is not written using words from their own economic jargon. To make it appealing to the "masses" of economists, I ornate it with stories and thoughts that relate to well-known economists and my own personal interpretations in reading them.

Introduction [1-2]

The introduction of *Works and Days* is only two verses or 0.2415% of the total 828 verses of Hesiod's book. It is less than 0.2% if we count only words. Just as a comparison, John Maynard Keynes' introduction to his *General Theory* was 0.25% of his total book pages. Hesiod, made an invocation to Muses (knowledge) in his introduction, which is similar to Keynes who made an invocation to the received view of economic knowledge; the so-called classical economics which, according to Keynes, included economists' "muses" of Adam Smith, David Ricardo, James Mill, John Stuart Mill, Alfred Marshall, Francis Ysidro Edgeworth and Arthur Cecil Pigou. If he had added two more, we would have the nine Muses cited by Hesiod.

Luckily for all of us, Keynes left the list open because these names were given as notable examples of the economic "Muses" of his time. I am sure he could add a couple more, if he had the divine providence and the knowledge(?) of its similarity with Hesiod's work. Of course, if I was forced to choose, I would have preferred Hesiod's Muses, but this is a matter of semantics and aesthetics; both characteristics, however, do not enter into the economists' decision-making process or choices of theories. Definitely, Keynes' aesthetics of beauty differ from mine, but who am I to compare with anything that Keynes preferred? I met many economists to whom Keynes was the modern titan of economic theory and policy, and it was almost a sin to question the dictums of the master. Of course, nothing compared with the followers of Marx's "religion".

Hesiod was well aware that the Muses were not always telling the truth and begged for their help because he knew that they could deceive him. On the other hand, Keynes did not have such a problem. He was confident that his "Muses" were not telling the truth and it was his destiny to reveal the truth. There is a difference though: Hesiod's Muses knew the truth, but they could choose to deceive humans. Keynes' Muses were innocent and not deceitful; they thought they were telling the economic truth. Thus, it was left up to Keynes to reveal to

them and to all of us how naïve they were in believing in a “classical”¹⁷ world. The fact that very few economists at the time believed in what Keynes wrote that they believed is not of great importance.

As for myself, I feel very comfortable with both: the Hesiodic and the Keynesian myths, but Hesiod's is much more interesting. After all, to deal with nine beautiful, knowledgeable and ageless (immortal) women is much better for me than to deal with the classical and non-classical all-male economists. Again, it is a matter of individual preferences and as an economist I exercise my right (privilege) of the “freedom to choose”.

The Uncertainty of Life [3-10]

Hesiod's next eight lines show the uncertainty of life. Keynes was aware of that especially when he used such categories as the “animal spirits” of investors, but it was Knight (1921) who offered one of the best economic analyses which linked risk, uncertainty and profits. In his 1957 introduction on the occasion of the reprint of the book he wrote, “In particular, no more elaborate theory of uncertainty would be offered. That would require a treatise on science and epistemology. It is still my conviction that contingency or ‘chance’ is an unanalyzable fact of nature” (p. lx). And on page 368 he wrote that, “Clearly there are limits to the terms on which the members of society are to be allowed to take chances.” Once something becomes “unanalyzable,” we can only rely on metaphysics. Hesiod provided a good one: Gods make the contingencies or “chances” of humans. Hesiod analyzed the “unanalyzable fact of nature”. Knight would have benefited if he used Hesiod's work, and as a result all of us would have been much better off in economic analyses.

In the second chapter of his book, Hesiod sets the contingencies of the human being described by Knight. We do not know the chances and we are facing uncertainty, but we do know that as the great Albert Einstein once said, “God does not play dice with the universe,” which I interpret to mean that despite that there is uncertainty, it is up to us to discover the laws of nature as Hesiod explained in chapter seven of his book, *Works and Days*. I think Knight would have been better off if he had adopted Hesiod's metaphysical explanation of only eight lines instead of writing so many pages explaining the nature of uncertainty and the limitations of human knowledge—especially from Knight's chapter seven when he discusses the meaning of risk and uncertainty, Hesiod did it better.

Hesiod was the first to offer the much-needed metaphysical explanation of uncertainty and the role of chance. Gods may decide who is going to be rich or poor; who is going to be happy or miserable; who is going to be sick or healthy. However, Gods do not operate in a vacuum. All the good things in life can be achieved and all the bad things can be avoided if human beings work because this is what Gods want them to do, or at least this is how Hesiod wanted Gods to behave. Hesiod emphasized that all humans are mortal (βροτοί), important (φάτοί)

¹⁷It is so unfortunate that Keynes chose this word to describe the model that was against it and so eloquently discussed in chapter two of his *General Theory*. Most probably he did so out of respect and generosity that some Englishmen have, especially whenever it is convenient for them.

and unimportant (ἄφατοί), famous (ῥητοί) and unknown (ἄρρητοί) because this is what the great Zeus has decided. It is Gods that empower (βριάζει) someone and easily the powerful (βριάζοντα) destroys; easily the eminent (ἀρίζηλον) diminishes and the obscure (ἄδηλον) pushes up; easily corrects any unfairness (ἰθύνει σκολιὸν) and abases the snob (ἀγίνορα).

However, there is a very serious epistemological problem with this excellent metaphysical Hesiodic analysis which leads to a number of important verifiable (testable) hypotheses. For example, if someone is important or not important, can we infer that this is the Gods' will? Or maybe the Gods do not always do it right. It seems to me that Hesiod had some doubts that Zeus will do his job in his economic difference with his brother, Perses. This is the reason Hesiod called on Zeus to show the necessary care (perhaps sometimes Zeus was careless) so that he would receive a fair trial. Somehow, he thought that there was a human-created (non-divine) chance. Hesiod emphasized the uncertainty of life as being determined by chance (Gods) and offered this as a warning to his brother Perses and to basileis (kings and judges). His doubts about Zeus have a very sound economic foundation. Zeus is the one who had made the bad and good; in particular, the economic quarrel between men. Thus, as a good practical businessman, Hesiod wrote up the *Works and Days* to show to basileis and Perses that they have a personal interest to engage in fair competition in pursuing material goods¹⁸. This is the subject of his next chapter.

Fair and Unfair Economic Competition [11-26]

Any (micro) economics textbook has a theory of competition. No economist can avoid the long lectures on perfect competition, monopolistic competition, oligopolistic competition and monopolies. Hesiod's economic book is no exception. Hesiod makes it known from the beginning of his third chapter that there are two types of competition, he calls them strives¹⁹—one is bad and the other good, but both co-existed. Today's economists discuss the issue of bad strive (e.g., government intervention, economic rents, bribery, etc.) and the good strive under the label of perfect competition and free markets under the protection of good institutions (meaning ruling and judging), similar to what Hesiod was arguing 3,000 years ago.

Fair competition is exactly what any economics textbook analyzes, mainly under the chapters on perfect competition. In Hesiod's times there are no legal business companies, but individual producers who compete between each other. Most probably the market looks very much like the perfect competitive model

¹⁸A shrewd economist will notice that this phraseology looks very much like Adam Smith's *Wealth of Nations* and his famous butcher story. Actually, it is. Hesiod, in his *Works and Days*, uses morality and ethics (like Adam Smith, he can be considered a moral philosopher), but at the same time he knows that this is not sufficient and therefore he developed his economic argument of self-interest throughout his book.

¹⁹Baumol et al. (1982) called them a "contestable" market which is a subcategory of the general idea of competitive markets. I prefer Hesiod's phraseology, but this is a matter of personal preference, and of course the knowledge that some things can be called by many different names. Economists are lost if "marginal" is substituted by the word "additional" or Hesiod's beautiful word, ἐπιθήκη.

with very few adaptations; prices were determined by demand and supply, which might be what Hesiod called fair price.

In this chapter, Hesiod gave examples of good competition between the various economic professions of his time including his own of rhapsodists (ῥαψοδοί). Hesiod considered this competition good for the society as long as justice and peace prevails. However, this cannot be achieved when the archons (kings and judges) and members of his and his brother Perses' upper-class are corrupted. This is discussed in the next chapter of his book.

Contemporary economists, starting with Adam Smith, use exactly the same phraseology and distinctions. The historian of economic thought, who I mentioned in Papanikos (2022a), made a similar argument which is supported by Adam Smith's definition of perfect competition. Stigler (1957, p. 1), in his paper entitled *Perfect Competition, Historically Contemplated*, wrote, "'Competition' entered economics from a common discourse, and for long it connoted *only the independent rivalry of two or more persons*" (italics added).

This is exactly what Hesiod meant by fair competition of his time, i.e., the competition of two or more people that supply the same good (e.g., a builder) or services (e.g., a singer). In the 8th Century BCE, if not before, there were good and bad builders or good and bad singers as they exist today. Of course, they command a different price (wage).

Hesiod made another contribution by connecting the unfair competition to war. West, in his English translation of Hesiod's *Works and Days*, translates the Greek word "πόλεμον" as fight, but the correct one is "war". Hesiod himself used the same word to describe the war of the Seven against Thebes. If I interpret correctly what Hesiod stated in this chapter, then unfair competition leads to wars, and this does not exclude civil wars as Hesiod explained in his chapter of economic history. With the exception of very few economics textbooks, most fail to relate unfair competition to wars. For example, David Ricardo took wars as given and never related them to unfair competition. Ricardo (1817, p. 176) wrote that, "The commencement of war after a long peace, or of peace after a long war, generally produces considerable distress in trade."

However, many economists would reverse the causality. Distress in trade brings wars! Hesiod was the first to make this connection. Later Marx and Marxian economists considered wars as the natural outcome of the economic competition between imperialist countries instigated by their national capitalist classes. Hesiod, however, pointed out that this relation between war and competition seems to be a natural outcome of human (economic) behavior when justice does not prevail. I should add that there is not isopoliteia, even between democracies as I explained in Papanikos (2022d, 2022e). In any case, I will accept Hesiod's explanation.

Economic Corruption [33-41]

As I have demonstrated in Papanikos (2014, 2015), corruption is an economic issue which has been thoroughly analyzed in the contemporary economics literature; especially the economic growth literature. Even though the evidence is inconclusive, there is a wide acceptance that corruption is negatively related to economic growth—so also thought and argued Hesiod 3,000 years ago.

In Hesiod's times, *basileis* (kings and jurors) were the archons who controlled the executive and the judiciary powers. They were responsible to judge economic and other differences between citizens. Hesiod called them wise when he appealed to them to listen to his side of the difference with his brother, but he also characterized them with the beautiful noun, “gift-eaters” (*δωροφάγους*).

The literature on corruption is huge and I am not going to discuss it here. It seems to me that the same characterization applies to today's Greek politicians and judges²⁰, as well as to many non-Greeks. Unfortunately, Hesiod's work has had no impact on them. They still remain gift-eaters (*δωροφάγοι*).

There are two types of corruption. Hesiod mentioned both: the economic corruption when members of the upper class, like Perses, think about stealing other people's property and valuables; and the ethical deterioration of values, of trust, of solidarity between people, especially those who live next to each other and those between relatives. These types of corruption are determined by formal institutions (judiciary) and by informal institutions such as culture and the level of civilization. Hesiod's views on this important subject can be found everywhere in his work.

Contemporary economic research has looked at the role of culture and formal institutions. In a survey of this literature, Alesina and Giuliano (2015) have looked at the relation between culture (values of people) and formal institutions. Many factors determine culture and formal institutions such as geography, technology, epidemics, wars and historical shocks. Hesiod's should be considered as a pioneer in emphasizing these factors and the role of culture and formal institutions on the economic progress of society.

In this chapter, Hesiod scorned his brother that his attitude (culture) towards going after his and other people's properties had no future. In nine lines he used so many economic words that are of great interest. He told his brother that he must first solve his own individual economic problem and when he reached what economists have called his “bliss point” (*κορεσσάμενος*), only then can he start debates for foreign property (*κτήμας' ἐπ' ἄλλοτρίοις*). He would not have a second chance because, as explained below, he had a bad reputation of snatching other people's property by bribing the archons. If only he knew that an increase in such wealth does not bring happiness.

It is obvious and becomes clearer below, that in this chapter Hesiod, as contemporary economists do, paid great attention to the culture (values) of his brother and the corruption of formal institutions (judiciary).

²⁰One economic aspect of corruption is tax evasion which is as old as the written history itself. Solon's tax reforms not only aimed at fairness, but to reduce corruption. I have discussed this issue in Papanikos (2015) and in more detail in my book Papanikos (2014).

Scarcity [42-46]

This important contribution of Hesiod on scarcity is examined in detail in Papanikos (2022c) and I will not discuss it here with the detail it deserves. I think this is the greatest contribution of Hesiod's economic analysis. He defined scarcity with a superb example. He stated that if scarcity did not exist, then one can work one day and satisfy the material needs of an entire year. Also, in other parts of Hesiod's works, we find the issue of scarcity to reappear many times.

Many economics textbooks start their justification of the need to "economize" (Hesiod used the word *φειδώ*), in other words a need for economic analysis. Hesiod was the first economist to define economics this way. However, he did not do only that, he did something more. No economics textbook provides an explanation why scarcity exists. Why, for example, can't one and only one apple tree produce all the apples, apple juice and apple pies that ten billion people would eat and feel fully satisfied, or as Hesiod would put it, "κορεσσύμενοι"? Why?

No economics textbook has provided an answer, but they take it as given. Hesiod provided a metaphysical explanation of the unexplained phenomenon of scarcity, but his analysis can be used to distill an important dynamic (diachronic evolution) trend of the scarcity problem. Both are examined in detail in Papanikos (2022c), but a sketch is given below.

The Metaphysical Explanation of Scarcity [47-53]

Hesiod wrote a beautiful myth on the scarcity issue similar to Paradise, but with a much more interesting scenario. Contrary to the story of a lost Paradise, Hesiod's myth is an economic one. Hesiod's story is full of contradictions and logical gaps. Economists, however, are used to such analyses anyway²¹. Hesiod's story develops as follows.

Firstly, the human race was living in abundance. Secondly, and for some unexplained reason, Gods took away the technology of fire from the human race²². Next, Prometheus²³ stole the fire from Gods. Following this, the Gods got angry,

²¹I consider the story of perfect competition as the best of all stories told by economists. The problem is that many of them believe that it is not a yardstick, but it represents some reality. In my first year of studying economics, I was exposed to the perfect competition model: an excellent myth of how the economy should work. However, as in all good myths, I found some logical gaps. For example, I asked my teacher, since all firms are homogeneous and so many, when the price goes down which firms will drop out of the market since reducing quantities was not an option with the given cost structure. Or why profits generated in the short run when the $MC > AC$ goes to capital. All myths have contradictions and logical gaps.

²²The explanation given in *Theogony* [535-560] is not sufficient because it presupposes that the human race was facing scarcity. For example, there would have been no need for Prometheus to cheat Zeus and save on the sacrificed meat if all goods were in abundance. This gap does not reduce the beauty of the myth. As an economist, I would say let us assume the gaps away and continue with the story because there is a moral (nice conclusion) at the end. It would not be the first nor the last to assume logical problems away from the nice myths, which economists have developed the last two-three centuries.

²³The etymology of the word "Prometheus" is of economic interest. It can be translated as "foreteller" or "foreseer", but the one I prefer is "forlearner", i.e., learn before you do something

very angry with Prometheus. However, for some unexplained reason, they decided not only to punish Prometheus, but the entire human race. After all, Plato (in his *Symposium* for example) was right to have his doubts about the morality and ethics of Hesiod's Gods. They looked too much like human beings to Plato. Sometimes, they behaved like "monsters" and "animals," not like Gods. The story continues with the Gods deciding to create a beautiful woman, and here the story becomes very salable (sexy) to the masses. Zeus asked all Gods to contribute with gifts "δῶρον" and all (παν in Greek) the Gods gave many gifts (δώρα), and for this reason she was named Pandora ("all-gifts"). Now these gifts included the beauty of appearance (to make men tremble with lust as Hesiod stated; I guess women's lust was left out until Sappho's time one century later). The wickedness of her soul was also a gift given by Gods to punish all men (I repeat: not women). Something that puzzled me in this myth is that Zeus asked the Goddess Athena to teach her various professions (I translate the word ἔργα as professions); particularly how to weave the loom. I could not find any logical interpretation of why a woman whose purpose was to play a role of a "bombshell" needed to know how to be productive. My only explanation is that Hesiod was a great economist and all his analysis had an economic justification. He wanted to give a productive role to women and this was in the production of textile and apparel. Pandora was then not sent to Prometheus, but to his brother, Epimetheus, i.e., the one who learned by making mistakes assuming that it was not too late. Epimetheus was so "stupid", as most men are when they see beautiful (sexy) women, that he had forgotten what his brother, Prometheus, told him which was not to accept any presents from Gods. Next, and so far so good, with Pandora came a jar (and not a box as Erasmus translated it) full of all possible sufferings: scarcity of goods, diseases and so many other things. However, the jar had a lid which Pandora opened and all the bad things hit the human race. However, Pandora was smart enough to put the lid back on and close the jar. I assume that the poor woman did not know what was inside the jar. Hope was left inside; the only good thing left for the human race. Hope relates to technology because the human race hopes to find solutions to its problems by inventing new technologies which will be brought by Prometheus, assuming that he is not bounded. Many political systems have sought to bound Prometheus throughout history.

Needless to say, the beauty of the myth attracted a global interest of artists and writers, which I am not going to review here. My favorite question is the following: Is it Pandora's fault or Epimetheus' stupidity that the human race is faced with scarcity and epidemics? Why would Pandora put the lid back and kept hope inside? Was it Gods' will or her own smartness (as a result she was forced to be one of the humans)?

My own interpretation is that scarcity cannot be explained by non-metaphysical means. Remember my curiosity of why an apple tree does not produce apples for 10 billion people but only for few, and only after applying very hard human labor. However, the myth of Prometheus shows how the human race

from "pro" and "metheus" which might be the root of "method" or "learn" (μαθαίνω). An interesting coincidence is that in Modern Greek the noun "prometheia" means, "when I buy food in advance", i.e., before my need to eat.

can revolutionize the means by which the scarcity problem is diminished and hope that technology one day will eliminate it. That day many good²⁴ things will happen, including that there will be no need to learn economics. I guess the Nobel Prize for Economics will be abolished as well.

Hesiod himself was most likely not satisfied with this beautiful myth to explain scarcity and so he developed a new one by opening up a new chapter which is his theory of economic history.

A Theory of Economic History [105-201]

This chapter is the second largest of the book. Hesiod develops his theory of economic history. As many writers after him did (Marx was one of them), Hesiod looked at the historical human development (he calls them races) as going through different historical periods. These periods have economic characteristics and the use of metals and technology is the most important one. After scarcity, I consider Hesiod's theory of economic history or human development as his most important contribution to economic analysis, and I have examined it with all the deserved detail in Papanikos (2022b).

Justice, Peace and Economic Growth [202-285]

Economic analysis has expanded to analyze many issues which are not in the strict sense economics. I have already mentioned the institutions and culture. Many studies have related justice and peace to economic growth. So did Hesiod in chapter eight of *Works and Days*. The chapter opened up with a new parable, but this time the aim was at the archons (kings and judges). Hesiod considered justice and peace (stability and absence of wars that kills the youth) as the most important determinants of economic progress and growth. Justice makes the city prosper (τέθηλε πόλιν) and its people to bloom (λαοὶ δ' ἀνθεῦσιν). Hesiod uses here two verbs that relate to production, and to make sure that this intention was understood, he made it explicit in this chapter in a few lines below.

According to Hesiod, in a city with peace and justice there is no starvation (λιμός) because there is high production (πολὺν βίον) such as wheat (ζείδωρος²⁵), meat (ῥιές), fleece (μαλλοῖς), honey (μελίσσας). Generally speaking, in this city the products grow forever (θάλλουσιν δ' ἀγαθοῖσι διαμπερές). Now economists are exhilarated in citing Amartya Sen's "proverb" that starvation, or to use his own word, famines, do not happen in democracy, assuming that in a democracy there is

²⁴Many learned economists might relate this to another masterpiece written by Aristophanes in 408 BCE and then revised in 388 BCE, entitled "Wealth" or *Plutus* in Greek. Even this relates mostly to the distribution of wealth, as the story goes that the blind God Plutus finally sees and reconsiders where to go. All become rich, but this does not solve the problems of the human race. Some people's utilities are reduced. The equal distribution of Plutus did not result in a Pareto improvement. Some people became worse off including the old rich lady who received sexual pleasure from her young lover. The lover did it for money. Once Plutus touched him, he became wealthy and he did not have to sexually please old ladies for money. What unthinkable things happened in ancient Athens in the 5th-4th centuries BCE.

²⁵Actually, the word means "gifts of living", i.e., means of living.

justice and peace. I will not condemn Sen for plagiarism, but of ignorance of not knowing that Hesiod said that 3,000 years ago. Of course, Hesiod said it better by generalizing it. It is not democracy per se which does not produce a famine, but justice and peace. Many countries, which hardly can be considered democracies according to the five criteria of democracy as have been analyzed in Papanikos (2022d), have not faced famine, but there was peace and some sort of justice.

Many writers have claimed that in ancient times there was no concept of total economy and therefore economic growth. I think they should read Hesiod carefully. Hesiod talked about the economic growth of his city, which at the time was a state, the so-called city-state. He also defined economic growth as the continuing (uninterrupted) increase in aggregate domestic product (θάλλουσιν δ' ἀγαθοῖσι διαμπερές). Finally, when the economy is booming, so does the population. It increases and this of course brings happiness.

Let me further explain the meaning of the three words because not all are economic terms, but Hesiod used these terms for his economic analysis of growth. First the verb *θάλλουσιν* (*θάλλω*) means grow, either for tress or societies. In *Works and Days*, the word is used to describe humans (or cities as explicitly stated by Hesiod), who prosper, thrive and are happy. The meaning of the word *ἀγαθοῖσι* is the same in modern Greek and of course in English. It means “goods”—not in the abstract, but economic goods which are produced with hard labor (toil) as so eloquently described by Hesiod. The last word of *διαμπερές* is the most important one because it relates to economic cycles or to the idea of uninterrupted economic growth. It relates to a time period, like the word *diachronically*. The word *δια* has the same meaning as the word *dia*. On the other hand, *περές*, has the meaning “until the end”. However, the English translation is, “uninterrupted growth of goods,” which is achieved by justice and peace.

In conclusion, Hesiod had an explicit theory for economic growth. It took economists thousands of years to come up with the same definition of economic growth as the one Hesiod gave. However, Hesiod did not only explain total economic prosperity, but individual prosperity as well, which is discussed in the next chapter of his book.

Work and Individual Economic Prosperity [286-320]

In this chapter, Hesiod started with a very thoughtful comment which related to the different abilities of human beings. Firstly, there are those who understand things by themselves. Actually, he used a superb adjective to describe these people as the best of the best: “πανάριστος”. These are the genius people, the ones with brains. However, this is not by itself sufficient. The best of the best must first understand what is best and I guess education helps. The second type of people are those whom listen and learn (are persuaded) by others; I guess from the best of the best. Hesiod uses the adjective “ἐσθλός” to describe this second type which has a double meaning. It can mean good, but it can also mean economically (materially) rich. These people can become good or rich if they learn. I tend to adopt the latter meaning of the word because in this chapter Hesiod talked about individual economic prosperity. The third type of people Hesiod called useless men (ἀχρήσιος

ἀνὴρ) because they do not learn. Hesiod does not explain if this is due to their ability or to their willingness. My understanding of reading *Works and Days* again and again is that Hesiod meant the unwillingness of men to learn because ability or talent is given by Gods, as Hesiod is stating. Therefore, he could not blame the individual. Thus, he condemns those who have the ability to learn but they do not. Usually this is a description of a lazy man, whom Hesiod also condemns in this chapter which is devoted to work. Hard work is the only way that a man can solve the problem of scarcity. However, the argument of work and only work characterizes the entire book. Hesiod continues in his next chapter to explain how work and work alone can contribute to the individual prosperity and the accumulation of wealth.

Wealth Creation (Accumulation) and Ethics [321-345]

The most important contribution of this chapter is Hesiod's closing remarks that by working hard you can accumulate property. As is the case with many of Hesiod's theses on various economic matters, the wealth creation arguments are spread throughout his book.

However, in these verses the creation of individual wealth is related to Hesiod's moral philosophy of honest and hard work. Hesiod states that wealth should not be created by stealing or by deceiving using words, i.e., lies. He explicitly says that if profits (κέρδος) are made by unethical means, then in the long-run this wealth is not sustainable. Why? Because Gods will punish such a way of making material wealth (ὄλβος). Wealth can be created only with individual ethical behavior and hard work and in this way, Hesiod says you will buy other people's property and not other people buying yours.

The Micro-Environment of Family Business [345-360]

Hesiod in this eleventh chapter opened up a new discussion which looked at the micro-environment of households and family businesses. Hesiod so far has examined the macro-environment of peace (stability) and justice which can bring economic growth to the city. He also examined the individual role in creating wealth through hard individual work and the accumulation of property. Now, as a good business economist, Hesiod examines the role of neighborhoods, friendships, philanthropic donations, etc. All of these make up what can be called the microeconomic business environment.

As mentioned, the book is didactic as a textbook should be. Hesiod opens up this chapter by explaining who should be invited for dinner and who should not. Friends should be welcomed and enemies should be avoided. However, what is important is to invite your neighbors because if something bad happens to your land, then the neighbors run for help first and then the relatives. He prays for a good neighbor because then things and capital will not be lost.

However, in the following verses Hesiod makes an unexpected discussion of borrowing money using the good neighboring relations. He says that when you borrow money from your neighbor, you should return what was borrowed but also

adding something. This way whenever you are in need again you can count on help. Here, Hesiod implies a reputation effect. In my old days in my village which looked so much like the Hesiod's village, the local bank branch would use the same method to lend money. Borrowers were separated between those with good and bad reputations. Good borrowers were the ones who were returning the money on time. Hesiod then considers that one makes bad profits if they are made this way. Or, in his own beautiful words, "don't make bad profits; bad profits are equal to loss [μὴ κακὰ κερδαίνειν· κακὰ κέρδεα ἴσ' ἀάτησιν (352)]. It is important to note here that Hesiod does not resort to a metaphysical explanation. He uses the fact of life which is called the reputation effect. This issue has been thoroughly examined at the microeconomic level.

A few verses follow which refer not to borrowing and lending, but to philanthropic giving. As I have explained in Papanikos (2022a), he was not at all against giving to those in need, but giving to those whom do not give even though they have the means (money) to give. He stigmatizes stinginess in these verses.

The Economics of Family Consumption and Inheritance [361-380]

This chapter is very difficult to separate from the previous one because Hesiod developed many ideas about the microeconomic environment of the household (verifiable or testable hypotheses economists would call them), which need further development. These ideas relate to the issues of utility, happiness and eudemonia.

Hesiod here talks about family business in general such hiring a worker and the wage which should be paid; family savings and how these can help in cases of a famine; scarcity at the household level and how this cannot be avoided, but can be mitigated with good household management; building trust among relatives and friends; the choice of a wife whose role is very important in increasing family wealth; the optimal family size which is related to the size of family business and what economists call today, marginal productivity of work.

From a microeconomic point of view all of these issues are extremely important, but I think they are lost by examining too many different things in very few verses. These issues come and go, particularly the family farm business. I was able to separate at least three such chapters which are examined below.

The Annual Production Process of the Family Farm Business I [381-535]

Next Hesiod opens up a lengthy discussion of the production process of the farm business which is the longest chapter of his book. Not only is this the longest, but it is one of the three chapters devoted to the same subject. Of great interest is the introduction of this chapter. Why do people want to start a business to produce goods and services? Any contemporary economist would respond by explaining that it is because the owner maximizes profits (or the present value of the firm). The accumulation of profits becomes personal wealth.

Hesiod starts this first chapter on production with a big "if". He stated that if someone wanted to maximize wealth, then he should organize his production

(business) as Hesiod advised. He uses a better word for maximize wealth: crave wealth, which reminds me Keynes' postulate of the "animal spirits" or Marx's "capitalist urge to accumulate".

Wealth here is clearly defined with the old and Modern Greek word of "πλούτος" known in English from the political system which is controlled by the rich (wealthy): plutocracy.

Hesiod has a microeconomic theory of labor. All wealth is produced by hard labor—one work after another, Hesiod advises (382).

However, Hesiod considers this part very important and therefore devotes many verses to outline a work plan for a farm owner, which supposedly is the advice that Hesiod gives to his brother Perses. The aim of the plan is to avoid poverty which forces people to beg for money. People help once, but they do not do a second time. Hesiod tells his brother (396-397) that he is not going to give him anything anymore. He advises him to work because this is what the Gods want the mortals to do.

This long passage of the book indicates something very important. Hesiod here does not talk about a small household, but for a relatively big family farm business. The owner of the business has what we may call today full-time workers and part-time (seasonal) skilled workers who help in the farm business.

The Production of Clothes [536-557]

Between the first and second chapter on the annual production process in agriculture, Hesiod talks about the production of clothes. Even though this might not look like a well-organized book structure (which is actually true), here, though, there is a good explanation for it. Hesiod followed the calendar (annual) approach to the production process and the production of clothes are mostly needed in winter. What is not clear here is who "manufactures these clothes". Each household, most likely, had its own production of clothes.

The Annual Production Process of the Family Farm Business II [558-581]

This chapter continues the discussion of the production process in agriculture of chapter thirteen above. Here Hesiod offers his description of the production process of a winery, which was the most important in the ancient Greek economy after the production of cereal and olive oil.

He also continues to talk about the production process of farming, but in this chapter, it is about the harvesting. The discussion of the production process in agriculture is interrupted for a second time with the inclusion of a chapter on leisure time. The reason is very simple: Hesiod follows the annual calendar and it is now the month of August.

Leisure Time [582-596]

As I explained above, Hesiod presented the annual production process in what we can call "real" time as opposed to a "logical" sequence of activities. This

sixteenth chapter deals with leisure time. Hesiod gives an excellent description of what people can do.

It is a perfect description of a picnic in ancient times with no difference at all from any picnic in any part of the western world that I know of. It included the consumption of food and wine. It also gave some hints about women's lust during this period. Hesiod uses the expression: *μαχλόταται δὲ γυναῖκες* (586), which means lustful are the women during this period. The adjective *μαχλός* means lustful and *μαχλόταται* is the superlative degree of the adjective in its plural number for females. The Greek language is very specific about these sexual things in order to avoid confusion and misunderstandings. It was very important, the separation of males from females, at least in Hesiod's times, because the same issue became very complicated a few centuries later as described in Plato's *Symposium*.

What has always stricken me with this description above is that nothing has changed, at least in Greece, after 3,000 years. Firstly, Hesiod did not mention the month by its name, but he described it: a flower that blossoms late in the summer, the cicada song is stronger and women are lustful. There is only one month that this happens in Greece which is the month of August. Secondly, as in Hesiod's times, most contemporary Greeks take their vacation in August. Thirdly, and with a lot of anecdotal and no so anecdotal evidence, men and women, Greeks and tourists, have much easier sexual relations during this month than any other month of the year. A short trip to any Greek beach during August is sufficient to persuade someone why Hesiod did state that in August women are at the peak of their annual lust.

Remember that Hesiod described human activities on a yearly calendar (chronological) basis and now he has reached the month of August in his analysis. Economists have come to recognize the importance of sex and have developed models to explain it. Hesiod was a pioneer in that in his textbook he related sex to works and days.

All of us we wish we had more such excellent "images" by Hesiod on the leisure time of his period. However, Hesiod's book emphasizes work and not so much pleasure. After all, his book was meant to be read and heard by the members of his own upper-class and the *basileis*. Most probably they were the lazy ones.

The Annual Production Process of the Family Farm Business III [597-617]

This is the third and last chapter of Hesiod's three chapters on the production process in agriculture. In this chapter, Hesiod provides the final activities of the production process, which includes the storage of all the products of the farm and their protection from thieves. Hesiod suggests the "hiring" of a watchdog with sharp teeth and suggests good payment in-kind, i.e., the dog's food should be plenty. These services are provided today by police and private security companies, which include technology, i.e., alarm systems. Despite all these, it seems that actual watch dogs are indispensable. It is difficult to find a farm today without at least one dog with sharp teeth.

The Economics of Seafaring [618-694]

Chapter eighteen deals with seafaring which is something that Hesiod disliked as an economic activity because it has many risks, including the loss of lives (hired sailors) and products. In this relatively long chapter, there are many economic ideas which relate to uncertainty, risk, profits, and economies of scale. These issues were discussed in previous chapters and now Hesiod applies them to commercial seafaring. What is certain though is that in this chapter Hesiod talked about seafaring as a commercial activity which should bring profits. Seafaring is still an important Greek economic activity.

The Economics of Family, Friendship and Social Behavior [695-764]

This chapter of Hesiod's work relates to chapter twelve above. The main issues here are the choice of a wife, the relations with friends and in general, social behavior. Of great interest is the conclusion of this chapter which Hesiod relates all these analyses to the importance of bad fame which never vanishes. This reputation effect was discussed in previous chapters as well as mentioned above.

A Monthly Economic Calendar of Works and Social Activities [765-828]

This is the part of Hesiod's book which deals with the "days", but includes many "works" as well. Many scholars of Hesiod have expressed doubts and different interpretations of what Hesiod really said in this chapter. Some have argued that this is part of another book Hesiod wrote on astrology (ornithomanteia) and expresses many superstitions that still exist today in many places of the world. Others have claimed that this does not belong to Hesiod.

There are many ways to read this last chapter of Hesiod's *Works and Days*. My reading is purely economic. Superstition or not, Hesiod presented a monthly plan of what to do. It is a monthly production function. Hesiod is an economist and a businessman. I am not sure if Hesiod believed in superstition, but it is not a bad thing if it helps to better an organization or a business without doing any harm.

To prove my point, I should emphasize what is the first of Hesiod's "superstitions" that you should do the last day of the month. Hesiod opened his twentieth chapter with an activity that the owner of a farm business must do. This was not the first day, but the last (thirtieth) day of the month. During the last day of the month, the manager-owner should ensure that all works of the month had been done (like a monthly statement of works done!). Only then if the manager-owner determined that the workers (people) had completed honest work during the month, their payments would be given to them (distributed). Payments would be distributed because some payments were in-kind and I guess not equal between all of them. This truly is amazing for all those who are being paid at the end of each month, after the supervisor has checked that they have worked all month. If superstition and astrology help in implementing this very practical business rule, so be it. There might be a costless way of enforcing bad owners of businesses to pay on time, because otherwise there will be a curse on them. I am sure many

workers around the world who are being paid late and not on time, wish their bosses would have the same superstition as once described by Hesiod.

All superstitions of this chapter are similar to the first one and my reading is completely different. My reading is that they help the production process and particularly to those who are responsible of implementing a day's activity on time. If they do not do, not only would they be paid less, but they would be punished by Gods; an excellent marriage of the ontology of wages with the metaphysics of superstition. This chapter deserves a separate paper to analyze all these superstitions as part of sound economic analyses. This is left for future research.

Conclusions

Hesiod was a manager and an owner of a farm business, most probably one of the largest in the area, which he inherited from his father. Not only did his father provide him with the means to live a good life, but it was most likely his father who taught him. From his superb talent of learning it made him the first great writer of an economics textbook. It was his experience with the business of the farm and his talent which produced the masterpiece of his *Works and Days*.

Hesiod's method is one that most historians and economic historians use today. Hesiod had a very good education, but at the same time he also had good experience as a manager of a business (agricultural) enterprise. Discussions with his father also provided him with additional evidence. From the Greek mythology, Hesiod was able to distill what was important especially for his book. From his business experience he had first-hand data to analyze and include in his book.

The argument that Hesiod's *Works and Days* was used as a textbook of introductory economic analysis explains the poetic structure of the work. The poem was read out loud in social gatherings most probably with the use of long breaks and the use of musical instruments. This helps the memorization of the verses. It is well known that the first step of learning something is the ability to memorize (remember), and the rhyming style of the text enhances this ability. Thus, the poem's purpose was to be didactic, and as such, should be evaluated. This paper examined this aspect of *Works and Days* as an introductory text of applied economics. This also explains why so much emphasis was given to agriculture because almost all aggregate production comes from the primary sector. Also, as a good economist Hesiod analyzed the (social) institutions the same way that modern economists analyze the institutional arrangement of today's market.

Thus, the discussion over the authenticity of some parts of the poem is not really important because it is quite possible that new additions to the poem were made as it was passed down from generation after generation. What is important is that *Works and Days* was and is a useful economics textbook.

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