Lifecycle Consumption and Life Insurance: a Systematic Literature Review

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Abstract

The aim of this research is to analyze, in a systematic manner, the literature on the consumer behavior and the impact of life insurance in the lifecycle scenario, to which for the consumer, the possibility to be able to use particular financial products has been added. This work uses a framework based on four stages and to process the systematic literature review (SLR) we employ the Tranfield approach in order to provide an efficient and high-quality method for identifying and evaluating extensive studies. The methodology was pursued step by step, analyzing keywords, topics and journal quality to arrive at a set of relevant papers that was analyzed in detail to evaluate the methods employed and results obtained. Through our research method, we selected 33 relevant articles, from which it emerged that consumer behavior depends on risk attitude, ageing and, hence, longevity and brevity risk. The results suggest that various types of life insurance and particular types of financial products (e.g. annuities, tontines and tounity) are used, all with the aim of eliminating these risks. On the other hand, the use of the various types of financial products might be a good choice to ensure flatter individual consumption, because it eliminates longevity and brevity risk. The importance of the study is to provide readers with a framework for the context analyzed. Based on the findings, this study concludes with some implications that aim to explain consumer behavior.

Keywords: Lifecycle Consumption, Life Insurance, Bequest Motive, Financial Products, Systematic Literature Review, Tranfield Approach.

1 Introduction

For several decades the consumer intertemporal choice theory has been one of the topics of most interest to scholars of both orientations, theoretical and empirical. The focus of these studies is the analysis of preferences and agents' decisions on consumption and savings, in relation to expectations of income that one has for the different stages of the life cycle (infancy, employment, retirement and death).

Of course, these lifecycle consumption decisions affect millions of people and the main issues an agent needs to think about are:
1. The percentage of income that should be saved for the future;
2. Risks to be insured against;
3. Detailed rules for investing savings;
4. Date on which retirement is planned.

The reference model in this branch of economic literature is the one introduced by Modigliani-Brumberg (1954) and Friedman (1957), called the life cycle model.

The life-cycle hypothesis developed by Modigliani is based on the following interpretation of consumer behavior: an individual's income varies systematically throughout his or her life and savings can transfer income from times of prosperity to times of hardship.

The individual's retirement has a strong impact on the change in lifetime income. Individuals retire from the working life (usually, in developed countries, at around the age of 65) and are aware that retirement will correspond to a sharp drop in income. Naturally, the agent's aim is to maintain a standard of living, measured by consumption, almost unchanged, and, therefore, it is necessary to save during one's working life. In this way, the agent will have a constant consumption throughout life (in practice, when one is young one works and saves to consume these savings in old age).

Another theory is the permanent income theory formulated by Friedman, that is complementary to the Modigliani theory and emphasizes random and temporary changes in individual income from one year to the next. According to Friedman's thinking, consumption depends mainly on permanent income, saving or taking on debt in order to standardize consumption against changes in transitory income.

In these contexts, Yaari (1965) introduces uncertainty about the duration of life and this produces two types of risk:
- *Longevity risk*, the risk of consuming everything before death;
- *Brevity risk*, the risk of dying without being able to consume all one's savings.

In order to cope with this uncertainty, people resort to various types of financial products and, in particular, life insurance policies. In general, the choice of these policies may be a good decision for consumers, as the agent's consumption may become flatter because longevity and brevity risk are eliminated. For example, when consumers take out term life insurance, they may eliminate the longevity risk (Di Liddo and Striani, 2022).

In this paper we run a systematic literature review and its definition is: "A review of a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise relevant research, and to collect and analyze data from the studies that are included in the review. Statistical methods (meta-analysis) may or may not be used to analyze and summarize the results of the included studies" (Cochrane Collaboration, 2014).

Using this systematic search process, we can identify studies which ones address a particular research question, as well as a systematic presentation and synthesis of the characteristics and findings of this search. The criteria for inclusion and exclusion in the review are objective, explicitly stated and consistently implemented such that the decision to include or exclude particular studies is clear to readers and another researcher using the same criteria would likely make the same decision.

Using this systematic search process, we locate the studies which address a particular research question and using some criteria for inclusion and exclusion, we will be able to include or exclude some studies.

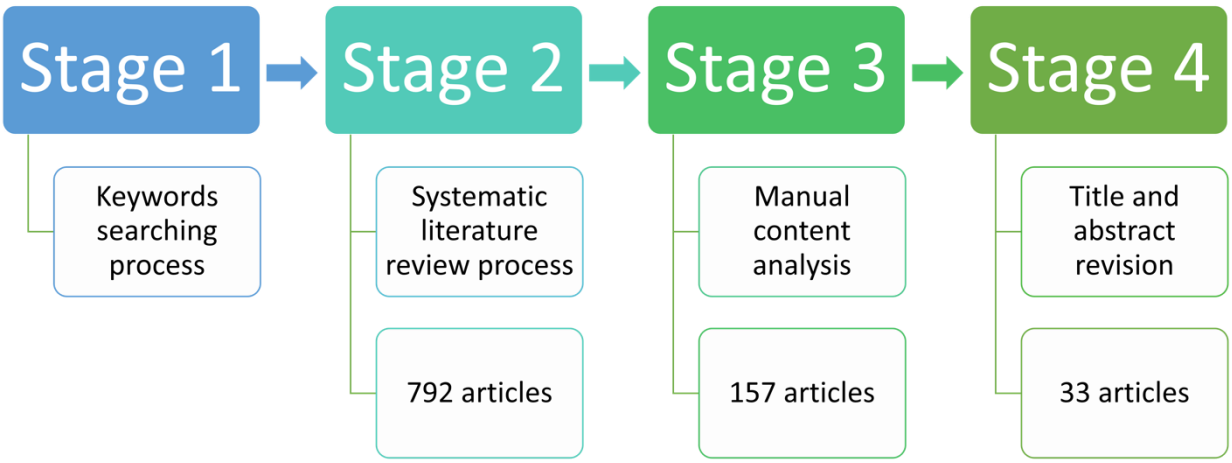
In our analysis, we identified another work that deals with the same context, namely that of Bhatia et al. (2021). Our work differs from the latter because first of all, it focuses only on the purchasing behavior of life insurance consumers, whereas we also analyze the possibility of consumers using different financial products that can secure their future. Further differences that distinguish the present work from the one cited above concern the research methodology, which employs different steps from those chosen in our framework, and, in addition, we use a publication quality index (QI) that is defined and tested in the present work. Similar to Bhatia et al. (2021), a categorization is carried out, but in this paper a different categorization is performed and any overlaps between the various clusters are also noted.

This paper is structured in four sections: after a brief introduction (present section), the second section concerns the research method. In this section, we create a research framework formed to four stages and we use the Tranfiled approach (2003) to carry out a systematic literature review process. The third section is about the literature review of the papers selected in the previous section; in this section we summarize the literature about the lifecycle consumption, life insurance policies and other financial products while creating 3 macro-categorizations. The fourth section is about the discussion of our paper sample with particular attention to papers analyzed in third section: we analyze some data extract to our sample. Always in the fourth section, we report some conclusions.

2 Research Method

To perform a systematic literature review (SLR), we designed a research framework that is composed of four stages which are shown in figure 1.

Figure 1: Research Framework



In the first stage (the identification of keywords) a balanced approach was considered, combining on the one hand the need to have a search that does not exclude anything relevant to the topic (completeness) and on the other hand the need to have a search through which only the most interesting results can be identified (precision). In order to join these two aspects, a balanced approach was decided on, which synthesizes the criterion of completeness and that of precision (De Matteis et al., 2022). Through this approach, we identify the following keywords "lifecycle consumption", "life insurance", "financial products" and "bequest motive". In fact, "lifecycle consumption" is a broad term that goes in the direction of comprehensiveness, whereas the term "bequest motive" narrows the focus of the research to a more precise scope. Furthermore, with the term "life insurance" and "financial products", it is possible to find all articles based only on this particular type of insurance and financial products. With this approach, therefore, we can identify articles focused only on our research field.

In the second stage we ran the systematic literature review process and to do this, we used the approach of Tranfield et al. (2003). This approach which was based on review process models used in medical science contexts and it was developed in order to have a systematic, transparent and reproducible review method, also enhancing the knowledge base and evaluating its application in other fields of study. In fact, this approach has often been used in recent years for several subjects such as product service systems technology (Reim et al., 2015), business process management (Röglinger et al., 2012), information/process mining and knowledge management (Corallo et al., 2020) and also in the cosmetics industry as well (Cecere, et al., 2022). The SLR approach is also used in studies that analyze the consumer behavior (Phulwani et al., 2021 and Chauhan and Sagar, 2021) and for all of these reasons this approach is particularly useful in the present paper, due to its methodological rigor. Specifically, the Tranfield methodology was composed of three main phases: planning, execution, reporting and dissemination.

We started with the planning phase. To achieve our goal, we used the keywords identified in the first step and introduced the terms "Lifecycle Consumption" OR "Life Insurance" OR "Bequest Motive" OR "Financial products" to search for the title, abstract and keywords.
Moving on to execution the SLR, the initial Scopus search (we chose the Scopus database to ensure the quality of the review (Falagas et al., 2007)), based on the selected words appearing in titles, abstracts or keywords, identified a total of 72607 publications. We therefore restricted the field to the last 11 years (2012-2022), as our research is based on recent years, obtaining 42675 publications.

By limiting the search to "articles", "reviews", "books" and "book chapters", a total of 35595 publications were obtained. Considering only the publications in journals and books, there were 34428 documents. However, to achieve the aims established, only documents included in the fields of economics, econometrics and finance, business, management and accounting were selected, obtaining a total of 11575 publications.

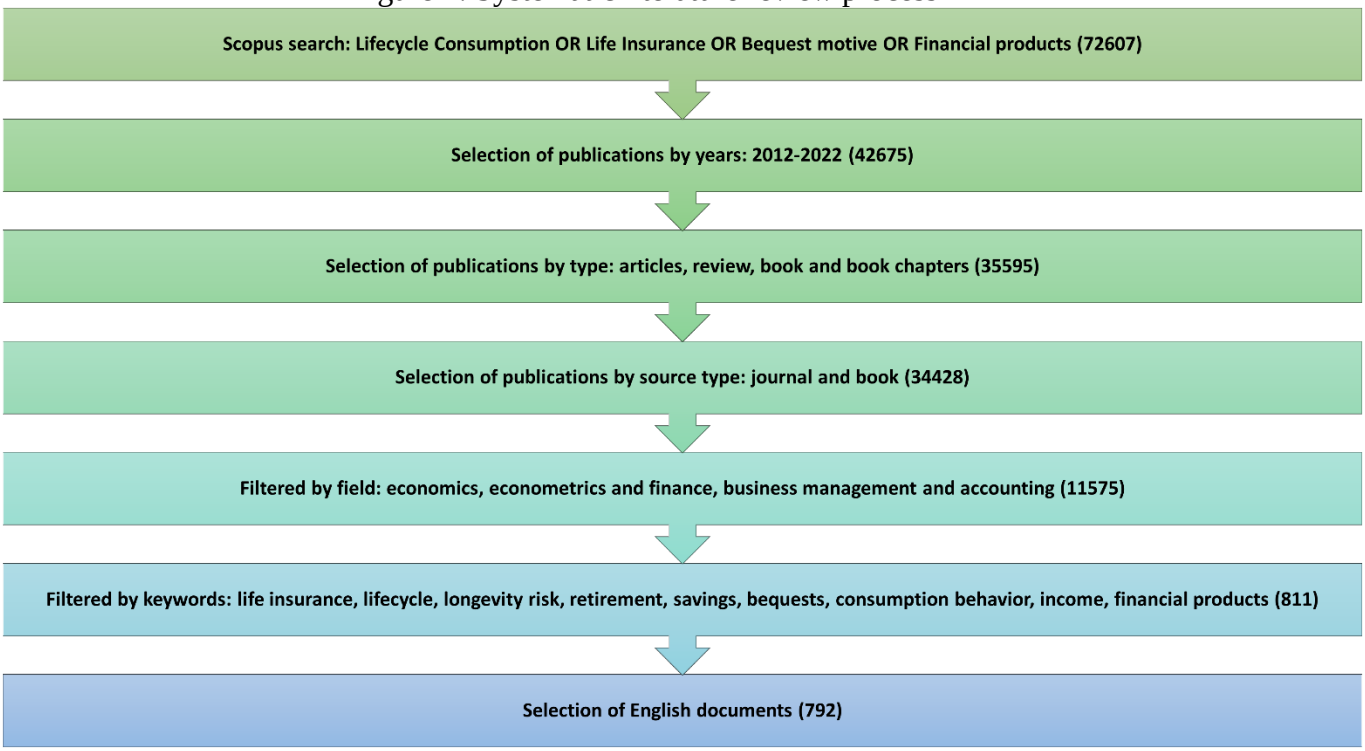
Due to the significant number of articles found and considering that those of greatest interest here would be the ones that incorporated the keywords, we used a new filter (the keywords "life insurance", "lifecycle" "longevity risk", "retirement", "savings", "consumption behavior", "income", and "financial products") obtaining 811 publications.

Then, we only considered the articles published in English and obtained the final number of 792 documents. We followed this practice as has been carried out by other researchers (Mishra et al., 2021; Vrontis et al., 2021, Vishnoi et al., 2022). We report the above SLR process in Figure 2.
We faced, finally, the last phase of the Tranfield approach (reporting and dissemination). A total of 792 publications were obtained from the execution stage of the SLR. The number of publications in

2019 (59), 2020 (94) and 2021 (117) increased, which highlights the growing attention to the topic (Figure 3).

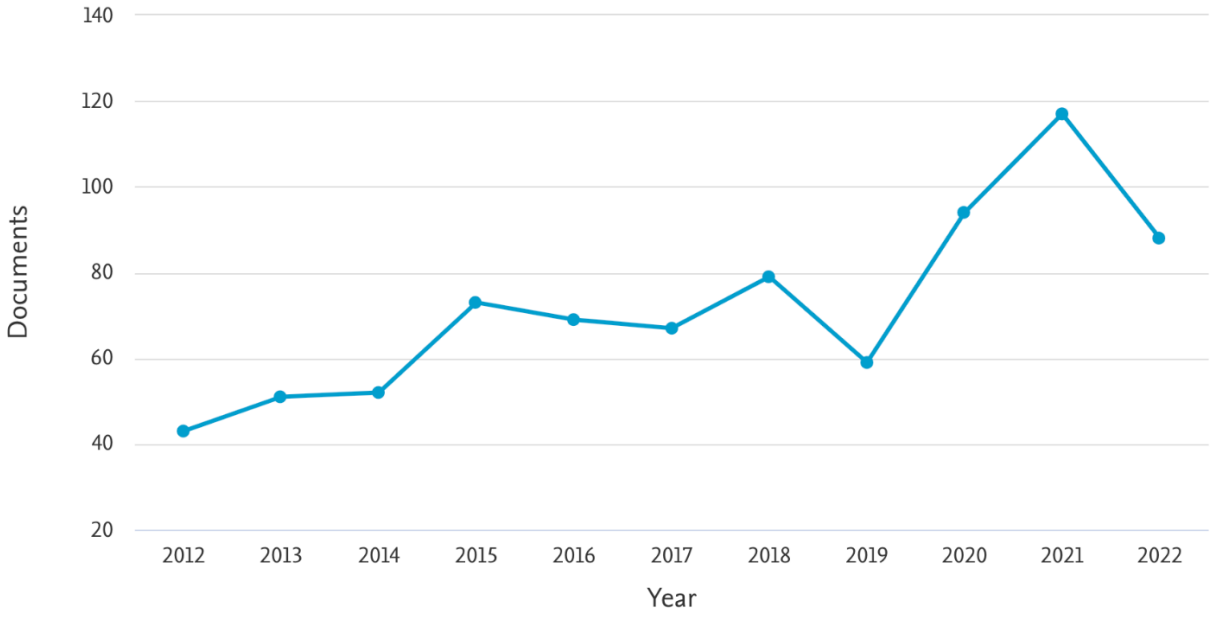
These topics were published by 160 journals, with 11 of them publishing 10 or more articles (294), representing about 37% of the total. Analyzing the Scopus impact evaluation of sources with the most publications, 69% are in the first quartile, 28% in the second and only 3% in the third (none of the journals examined can be found in Q4), demonstrating the high standard of the publications and the level of interest in the subjects (Table 1).

Figure 2: Systematic literature review process



Source Scopus

Figure 3: Trend of documents by year



Source Scopus

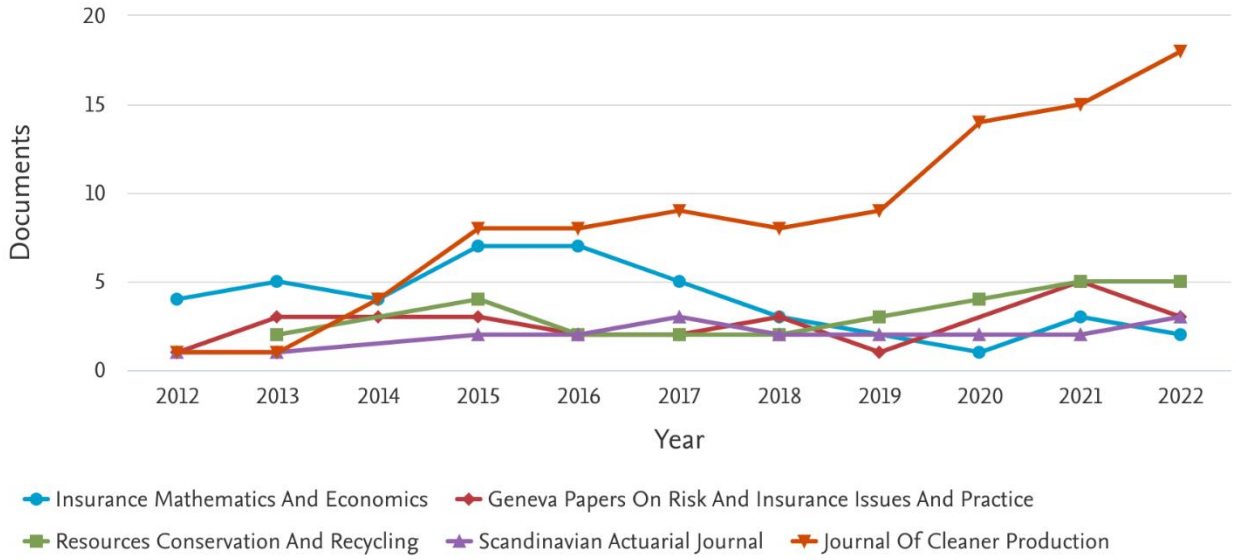
Table 1: Journals with ten or more documents published

Source	Documents	Ranking Scopus
Journal of Cleaner Production	95	Q1
Insurance Mathematics and Economics	41	Q1
Resources Conservation and Recycling	29	Q1
Geneva Paper on Risk and Insurance Issues and Practice	26	Q2
Scandinavian Actuarial Journal	20	Q2
European Actuarial Journal	18	Q2
Risks	17	Q2
Technological Forecasting and Social Change	13	Q1
Journal of Retailing and Consumer Services	13	Q1
Astin Bulletin	12	Q1
Journal of Risk Finance	10	Q3
Others	498	
Total	792	

Data source: www.scimagojr.com/journalrank.php (own elaborations)

In the following figure 4 we show a summary of the sources of the articles in our sample distributed over time.

Figure 4: Documents per year by source



Source Scopus

In the third stage, we identified potentially relevant documents and used a manual content analysis method to examine and elaborate the sample papers (Miles & Huberman, 1994), to which we applied a qualitative systematic review criterion (Siddaway et al., 2019). Specifically, adopting the approach used by Hsieh and Shannon (2005), three strategies (conventional, direct and summative) were used to examine the content of the articles in the sample: the data for each article was manually coded using an Excel file that contained information regarding a set of bibliographic fields (e.g. authors, year of publication, title, journal name, etc.) and descriptive statistics (e.g. citation number) to which abstracts were attached. Specifically, we used two criteria to obtain an assessment of the quality of the publications in our sample, namely:

- Relevance: using the relevance filter on Scopus, we assigned a weight to each publication, taking care to assign a higher weight to the most relevant publications. The relevance concept is referred to a statistical model through which a correspondence is created between search terms and textual documents available in the Scopus database (Rovira et al., 2019);
- Contemporaneity: we calculated the contemporary H-Index (HC-Index) in order to take into account for each publication not only the number of citations but to give more relevance to the most recent publications (Sidiropoulos et al., 2007).

Once these criteria were used, we calculated a quality index (QI) as follows:

$AQI = Relevance + HC$ with AQI Absolute Quality Index

And, so:

$$QI = \frac{AQI}{\max AQI}$$

Depending on the value of QI we will have:
Low Level (QI < 30%)
Medium Level (30% < QI < 60%)
High Level (QI > 60%)

In this way, we obtained 157 potentially relevant publications.

Finally, the fourth stage was performed. With this last step, the title and abstract were revised, resulting in the exclusion of 124 papers (this selection is illustrated in the table in the appendix). At this stage, we excluded 82 articles for the title and 42 for the abstract for a total amount of 124 papers, mainly because they did not focus only on the topic of life cycle consumption or they did not address only the topic life insurance or other financial products. After reading the remaining 33 articles, they were accepted as relevant, credible, insightful and rigorous enough to be included in the literature review that will be carried out in the next section. In Table 2 we report the list of publications analyzed with related context.

Table 2: Summary of publications analyzed

Number	Authors	Year	Context
1	Barrieu et al.	2012	Longevity risk modeling and ILS
2	Lockwood	2012	Bequest motive and annuity
3	Chang, Lee	2012	Economic development and life insurance
4	Sliwinski et al.	2013	Determination of life insurance demand
5	Farhi, Werning	2013	Insurance system and fiscal impact
6	Eling et al.	2021	Financial risks and life insurance
7	Horioka	2014	Household preferences and bequest
8	De Nardi, Yang	2014	Bequest motive and retirement wealth
9	Laun and Wallenius	2015	New pension system
10	Milevsky, Salisbury	2015	Retirement income and tontine annuities
11	De Nardi et al.	2016	Savings and retirement
12	Milevsky, Salisbury	2016	Equitable retirement income tontines
13	Peijnenburg et al.	2016	Full annuity

14	Lusardi et al.	2017	Financial knowledge in lifecycle model
15	Lockwood	2018	Retirees' saving and insurance choices
16	Chen et al.	2019	Tonuity
17	Mahdzan, Peter Victorian	2013	Life insurance demand and saving motives
18	Sauter	2014	Life insurance demand and bequest motives
19	Lim, Kwak	2016	Bequest motive and retirement
20	Mai et al.	2020	Purchasing life insurance
21	Hristova	2022	Life insurance penetration
22	Zhou et al.	2022	Life annuity
23	Shukla	2018	Life insurance penetration
24	Kumar	2019	Household choice for health and life insurance
25	Wang	2019	Life insurance demand for heterogeneous-agent
26	Wang	2022	Life insurance demand and financial crisis
27	Harris, Yelowitz	2018	Life insurance and racial disparities
28	Masud et al.	2021	Household purchase behavior and life insurance
29	Wang, Lee	2018	Life insurance and health expenditure
30	Aase	2014	Life insurance and pension contracts
31	Swee et al.	2021	Life insurance demand and developing country
32	Luciano et al.	2016	Life Insurance and gender differences
33	Hong	2012	Social security and private savings

Consequently, in the following paragraph we report the specific analysis of the articles included in our final sample.

3 Literature Review

One of the objectives of the paper is to summarize the literature on life-cycle consumption with a focus on the use of life insurance and financial products in the various cases. To this end, we conduct a brief literature review of the 33 published papers dealing with the contexts identified in Table 2. Using "context" column in Table 2 and elaborating on the contents of our sample of articles, we identified 3 categories into which we reported the selected articles.

3.1 Life insurance

Chang and Lee (2012) analyze the non-linear link between economic development and life insurance market activity. The authors' results show that the role of institutions on life insurance market activities decreases with economic development and in particular, they find that national income is positively correlated with life insurance activities and this effect is greater for developed than for developing countries.

Sliwinski et al. (2013) present a study on the determination of life insurance demand in Poland. This study identifies four main factors that have an impact on the demand for life insurance: 1) economic and financial factors; 2) future social development; 3) level of education; 4) life expectancy. The first factor has a positive impact on demand while the second and third have a negative impact. The last factor, on the other hand, does not have a significant influence on the demand for life insurance.

Eling et al. (2021) investigate the relationship between financial risk-taking and the choice to own life insurance. Based on the demographic and socioeconomic characteristics of insurance demand in their sample, the authors find a positive link between willingness to take financial risks and life insurance ownership. The empirical results, therefore, confirm that these discriminants can influence the demand for insurance.

Mahdzan and Peter Victorian (2013) analyze the determinants of life insurance demand on a sample of people in Malaysia. Their results also show that demographic variables and savings motivations positively impact the demand for life insurance, while financial literacy does not impact this demand.

Mai et al. (2020) analyze life insurance purchase behavior among a sample of people in Vietnam. The results show that the decision to purchase life insurance is mainly influenced by financial literacy and product accessibility. It is financial knowledge, therefore, that can positively impact the life insurance industry.

Hristova (2022), assuming that, due to the COVID-19 pandemic, the demand for life insurance increased throughout the EU, explains why this effect did not occur in Bulgaria. The author's findings show that Bulgarians prefer to allocate their surplus funds in alternative investment opportunities, and this is mainly attributed to the low income level and low productivity of the economy, as well as the lack of effective competition between the small number of insurance companies. This article therefore serves as a basis for a more in-depth study of the Bulgarian life insurance market, as a stimulus to increase the financial literacy of the Bulgarian population, and as a topic of interest to the insurance companies themselves in their struggle to promote business and unlock the market's potential.

Shukla (2018) anlyzing an emerging economy such as India, notes how there is little consumer demand for life insurance. The result that the author finds is that as age increases, the intention to purchase life insurance decreases and therefore, consumers do not see this purchase decision as a basic need which is the major problem holding back the diffusion of life insurance in India.

Kumar (2019) investigates households' joint choice for health and life insurance. The results found by the author suggest that the choice of health insurance positively influences the choice of life insurance and that these two choices are positively correlated, and that, therefore, these two types of insurance are complementary to each other and help households minimize risk.

Wang (2019) analyzes the life insurance demand of household participants in order to test for risk-sharing effects within a household. The results show that this demand is greater in single-parent households than in married households, and that the gender gap in life insurance demand is due to both the income gap between men and women and the risk associated with the income from the work performed by spouses.

Wang (2022) continues to analyze the demand for life insurance by relating it to household portfolio holdings in a dynamic framework. The author's results indicate that household portfolio holdings have a greater impact on the choice of life insurance than life events. Moreover, households with more financial assets allocated to bonds abandon life insurance coverage to a significantly greater extent.

Harris and Yelowitz (2018), assess how racial disparities impact the choice of life insurance coverage. The authors' results show that African-Americans own significantly more life insurance and this succeeds in mitigating racial disparities in wealth.

Masud et al. (2021) analyze the determinants of household life insurance purchase behavior. Their results show that the purchase propensity of households influences life insurance purchase behavior without distinguishing between household types as done by Wang (2019). Furthermore, the authors suggest life insurance company managers should target their products with consumers' purchase intentions in mind.

Wang and Lee (2018) analyze the impact of life insurance on both health spending and economic growth. The authors' results show that in a regime of low life insurance growth, health expenditure and economic growth are stimulated, while in a regime of high life insurance growth, such growth impacts neither health expenditure nor economic growth.

Aase (2014) analyzes optimal consumption with the presence of life and pension insurance contracts. The author notes that in the presence of this consumption puzzle it helps to eliminate both longevity risk and cohort risk and, thus, emphasizes the important role the insurance industry can play in improving well-being.

Swee et al. (2021) analyze the demand for life insurance in a rapidly developing economic environment in Southeast Asia (specifically Malaysia), with the introduction of the mediating variable 'Persuasion'. The pandemic COVID-19 has brought about a profound change in consumer choice and, therefore, the life insurance market is expected to grow significantly. The authors identify a set of research variables that impact demand, some already known in the literature (financial literacy, motivation to save...) to which they add persuasion. The results reveal that persuasion is an important as it has an effect on an agent's risk aversion. Furthermore, the authors recommend the creation of new strategies by policy makers (including financial and insurance agencies) that would help the penetration of life insurance in the population.

Luciano et al. (2016) analyze the determinants that lead to the purchase of life insurance by distinguishing between men and women. The results found by the authors show that demand for insurance is strongly correlated with income, family structure and employment status, but that in all cases women are less likely to take out insurance than men. Furthermore, geographical location within Italy also significantly influences demand, as does the financial status of households and their proximity to the financial market.

3.2 Bequest motive, retirement and savings

Lockwood (2012) analyzes the behavior of pensioners when deciding whether to make an annuity. In fact, very few pensioners usually make this choice and this represents a situation that finds no explanation when analyzing the rational behavior of agents who maximize expected utility. The response to this behavior is due to bequest motives. In fact, the author shows that people with strong bequest motives are probably more advantaged in not annuitizing any assets at the available rates. The evidence suggests that bequest motives play a central role in limiting the demand for annuities.

Horioka (2014) tests the three alternative hypotheses on family preferences (altruism, self-interest and the desire to build a dynasty) based on a sample extrapolated from a survey conducted in China, India, Japan and the United States. Looking at bequest plans, the author notes that for Americans and Indians such plans are much more consistent with altruistic preferences while for Japanese and Chinese they are much more consistent with selfish preferences. These results have a strong impact on the choice of effective tax policies involving public pensions and inheritance taxes.

De Nardi and Yang (2014) assume that households possess widely varying amounts of wealth at retirement and that this heterogeneity cannot be explained by differences in lifetime income alone.

Based on this assumption, the authors analyze the motivations for voluntary bequests and the allocation of accidental and intentional bequests (both in terms of timing and size) in generating wealth dispersion at retirement. The authors find that the presence of bequests not only generates greater dispersion of wealth at retirement, but also a reduction in the correlation between wealth at retirement and lifetime income.

De Nardi et al. (2016) analyze the saving patterns of retired U.S. households and observe that out-of-pocket medical expenses, which rise quickly with age, income during retirement and heterogeneous lifespan risk, can explain a significant portion of U.S. savings during retirement. In fact, the elderly run down their savings much more slowly than implied by a basic life cycle model with a known date of death. In contrast, public insurance may reduce the need to save (to insure against longevity) and medical spending risk.

Lockwood (2018) shows that, despite facing significant uncertainty about their lifespans and health care costs, most retirees do not buy annuities or long-term care insurance. Thus, the author verifies retirees' saving and insurance choices are highly inconsistent with standard life-cycle models in which people care only about their own consumption but match well models in which bequests are luxury goods. The results obtained suggest that bequest motives significantly increase saving and significantly decrease purchases of long-term care insurance and annuities.

Sauter (2014) analyzes the effects of bequest motive in economies where the demand for life insurance was not influenced by fiscal considerations. The author's results show a high probability of life insurance ownership in households with children and a high consideration for the family, which confirms the role bequest motives play in the demand for this policy tool.

Lim and Kwakb (2016), examine how the bequest motive may impact an employee's consumption, investment and retirement decisions. What the authors show is that risky investments before retirement decrease when the bequest motive becomes stronger or when the retirement incentive weakens.

3.3 Financial products

Barrieu et al. (2012) review developments in longevity risk modelling and the use of so-called insurance-linked securities (ILS). Thus, the authors analyze the risk management that in the insurance industry, and especially in the life insurance industry, has led to the adoption of new regulations that allow for a more accurate assessment of risk and the imposition of more effective solvency management rules. Moreover, longevity risk has an impact on the determination of the 'effective' retirement age and the 'effective' pension scheme, as future generations will almost certainly face one of the biggest challenges with increasing life expectancy.

Farhi and Werning (2013) analyze the optimal insurance scheme in a life-cycle context. The authors specifically study the dynamics of the tax rate on labor income and find that the average tax on labor increases from 0% to 37% over 40 years, while the average tax on savings decreases from 12% to 0% at retirement. In addition, the authors find that age-dependent taxes capture a considerable fraction of welfare gains, providing food for thought on the calibration of tax systems.

Laun and Wallenius (2015) analyze individuals' choices regarding when to stop working and when/whether to apply for disability benefits, as envisaged in the Swedish pension reform. The authors find that the new pension system creates ample incentives for older workers to remain in employment. In fact, the model predicts an increase in the average retirement age by 2.5 years, from 62.1 to 64.6, and this is because if one retires at the same age in the new system as in the old, the

implied pension benefit would be significantly lower. This is promising news for countries grappling with pension reform and indicates that there are significant lessons to be learned from the Swedish case.

Milevsky and Salisbury (2015) consider tontines which are a popular type of mortality-indexed investment. Such financial tools allow for significant rewards for the last survivors at the expense of those who die first and this can generate a retirement income which, however, for some scholars, may not be optimal. Indeed, according to the most widespread literature, life annuities are an actuarially sound instrument because they make constant payments and it is the insurance company that bears the longevity risk. The authors show, however, that when comparing the utility of optimal tontines with the utility of life annuities, the advantage of the life annuity over the optimal tontine is minimal. This study, therefore, shines a spotlight on a pension instrument that has long been neglected and points the way towards designing the next generation of tontine annuities.

Milevsky and Salisbury (2016), elaborate on the conditions under which such a scheme can be constructed fairly, even though it is not optimal for any cohort. In light of their findings, the authors compare the various pooling schemes proposed in the literature and draw a distinction between socially equitable, actuarially just and economically optimal schemes.

Peijnenburg et al. (2016) analyze some factors, including bequest motives, that may negatively affect the full annuity. Compared to the literature, the authors note that the full annuity remains optimal if and only if it is possible to save even after retirement. Indeed, whenever this is possible, agents are inclined to save considerable amounts from annuity income to mitigate consumption shocks. Moreover, if the individual decides to add equity-linked annuities to his or her portfolio, this does not allow him or her to improve his or her wealth significantly, and this is related to the fact that agents invest in equities to obtain the desired equity exposure.

Lusardi et al. (2017) show that financial knowledge is a key determinant for understanding wealth inequality. The authors' formulation predicts that people can invest in sophisticated financial technologies that generate higher expected returns, although they are expensive to acquire and depreciate over time. The admission of endogenous financial knowledge generates large differences in wealth ownership: in particular, the authors find that 30-40% of wealth inequality in the US can potentially be attributed to financial knowledge. Furthermore, the model succeeds in explaining the importance of financial literacy as there are considerable differences in wealth between different educational groups.

Chen et al. (2019) propose a new financial tool that could replace tontine products, which for many agents are undesirable as they entail high uncertainty of retirement income in old age. The authors, therefore, propose an alternative, to which they give the name tounity, which represents a new financial product that combines the useful features of both a tontine annuity and a traditional annuity. These new products allow one to have up to a certain predefined age a payoff similar to that of a tontine; past that age, the individual receives a secure payout of a classic annuity. These features make the tontine desirable for both the retiree (who benefits from a secure annuity in old age) and the insurance company (whose capital requirements are reduced compared to conventional annuities). On this basis, the authors show that pensioners with very low risk aversion prefer a tontine annuity while those with very high risk aversion prefer a conventional annuity. In contrast, agents with medium risk aversion prefer a tounity.

Zhou et al. (2022) propose an individual pension product that allows flexible longevity risk management. Such a product combines a lifetime income with a flexible death benefit to meet

individual bequest needs. By using this type of product, the authors show that systematic longevity risk is solved.

Hong (2012) analyzes the effects of social security on private savings. The author's results show that social pensions compared to life insurance reduce private wealth by less than 10% and this is mainly due to bequest and precautionary saving motives while uncertainty about future benefits plays no role.

As can be seen from our categorization, the first cluster includes 16 papers (around 49% of the total), the second 7 papers (21%) and the third the remaining 10 (30%). It is necessary, however, to specify that the analyzed papers were placed in clusters in which they are strongly correlated, but some papers show overlaps with other clusters, i.e. there are weaker correlations. To be absolutely precise, we represent this degree of correlation in the following table:

Table 3: Overlap papers in the clustering

N.	Life Insurance	Bequest motive, retirement and savings	Financial products
1	L	L	H
2	L	H	M
3	H	L	L
4	H	L	L
5	M	M	H
6	H	M	L
7	L	H	L
8	L	H	L
9	L	M	H
10	L	M	H
11	L	H	L
12	L	M	H
13	L	M	H
14	L	M	H
15	L	H	M
16	L	M	H
17	H	M	L
18	M	H	L
19	M	H	L
20	H	L	L
21	H	L	L
22	L	M	H
23	H	L	L
24	H	M	L
25	H	M	L
26	H	M	M
27	H	M	L
28	H	M	M
29	H	L	L
30	H	M	M

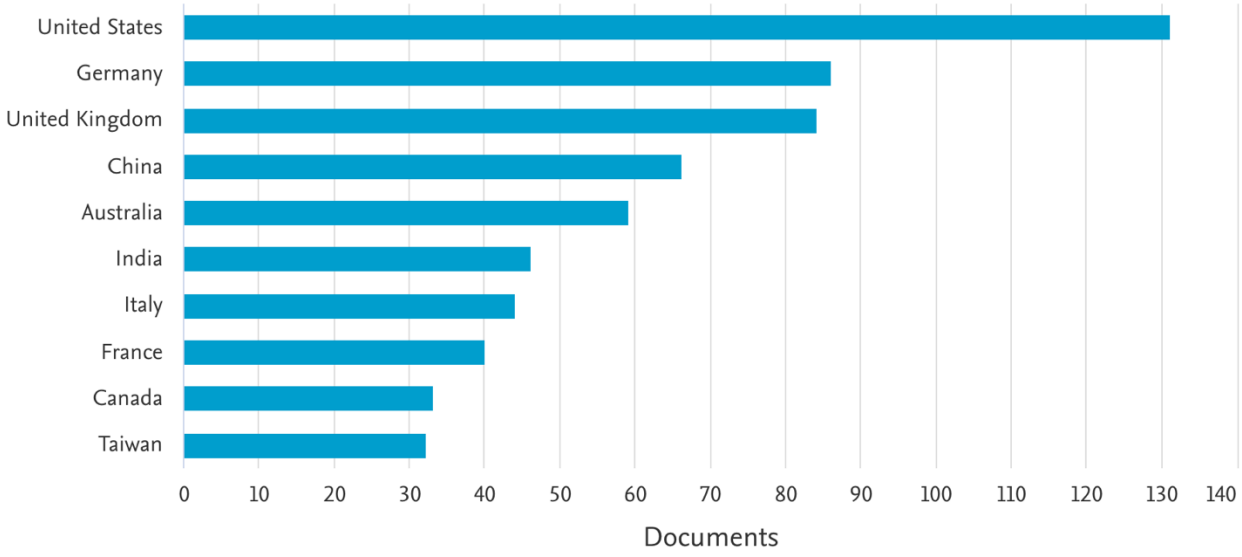
31	H	M	M
32	H	M	M
33	L	M	H

Notes: H denotes a strong overlap level, M denotes a medium overlap level, L denotes a weak or none overlap level.

4 Discussion and Conclusion

Let us now discuss some evidence from the detailed analysis conducted on our sample. Figure 5 below shows the country distribution of the researchers engaged in the field. In this figure we have: USA (131), Germany (87), UK (85), China (68), Australia (59), India (45), Italy (43), France (40), Canada (33), and Taiwan (32). It possible to note that the sum is higher than 157 given the different locations of scholars coauthoring a single publication. We can see that very little attention is paid to the issue in developing countries.

Figure 5: Geographical distribution of authors



While Figure 5 refers to the sample with 157 papers, we now go on to analyze the final sample of 33 papers. The first analysis is based on the approach employed in the discussed research. In particular, the use of statistical methods and the analysis of quantitative data seemed to be more predominant in 15 works out of the total (46%). A second group was characterized by the implementation of a mix of techniques that employ both quantitative and theoretical methods (30%). Finally, a slightly lower share, regarding the use of only theoretical and conceptual approaches (24%) was noted (Table 4).

Table 4: Distribution of approach type

Approach type	Papers	Percentage
Theoretical and Conceptual approaches	(1), (5), (10), (15), (16), (19), (25), (30)	24%
Quantitative approaches	(3), (4), (9), (11), (17), (18), (20), (23), (24), (26), (27), (28), (29), (31), (32)	46%
Theoretical and quantitative approaches	(2), (6), (7), (8), (12), (13), (14), (21), (22), (33)	30%
TOTAL	33	100%

Research conducted using quantitative and statistical methods (a total of 25 articles) involves the systematic collection and analysis of the data used (Lim et al., 2021). In this paper, the data collection

methods and analysis used by the studies are examined to characterize 25 of the 33 articles under review. Table 5 shows the different data collection approaches used and Table 6 represents the various data analysis methods used in them.

As can be seen in Table 5, during the analysis of the papers, we found that the highest percentage was made up of studies using surveys from databases (80%). In addition, a smaller proportion were studies using interviews (12%). As for online interviews and secondary data, there was only one paper per type which used these collection methods.

Table 5: Data collection methods

Data Collection Method	**Papers**	**Percent**
Database Survey	(2), (4), (6), (7), (8), (9), (11), (12), (13), (14), (17), (18), (21), (22), (24), (26), (27), (29), (32), (33)	80%
Interview	(23), (28), (31)	12%
Online interview	(20)	4%
Secondary data	(3)	4%
TOTAL	25	100%

As mentioned above, Table 6 shows the data analysis methods used in each study. We found that studies using regression as a method accounted for the highest percentage (52%). Specifically, of the 13 papers using this method, we can specify that five studies use Probit regression ((6), (18), (24), (26) and (32), with (24) and (32) using bivariate), two use Linear regression ((2) and (4)), two Cohort regression ((12) and (22)); while one uses Logit regression (23), one Instrument Variable regression (3), one Panel data regression (9) and one OLS and Tobit regression (27). In addition, a smaller proportion focused on studies involving the use of correlation analysis (12%) and the use of SEM methodology (8%). Only one paper used alternative methodology, representing 4%. Particularly in the category "other tests", it should be noted that the tests carried out in the reference paper are: t-test, Chi-square test, Augmented Dickey-Fuller (ADF) test and W-test.

Table 6: Quantitative data analysis

Methods	**Papers**	**Percent**
Regression	(2), (3), (4), (6), (9), (12), (18), (22), (23), (24), (26), (27), (32)	52%
Factor Analysis	(20)	4%
Correlation Analysis	(7), (8), (21)	12%
ANOVA	(17)	4%
PLS-SEM	(28), (31)	8%
Method of Simulated Moments	(11)	4%
Robustness check	(13)	4%
Simulated Minimum Distance	(33)	4%
Fixed effects model	(14)	4%
Other tests	(29)	4%
TOTAL	25	100%

The analysis presented shows the importance and usefulness of the use of some tools to face the lifecycle risks of longevity and brevity. The retirement period and the bequest motive highlight the need for investments to guarantee that the consumer maintains a good level over his or her lifetime

and, therefore, the purchase the insurance services can support the consumer in this investment choice.

Some of the papers analyzed (e.g. (1), (3), (4), (15)), in fact, suggest buying a life insurance policy to improve the consumer situation. In particular, with this purchase the consumer faces longevity and brevity risks and solves the bequest motive. Life insurance, also, helps to mitigate racial disparities in wealth. In fact, it is African Americans who own significantly more life insurance, as detailed in paper (27), but paper (32) highlights the gender difference with women being less likely to buy life insurance than men.

Some of the papers analyzed, then, focused on the bequest motive, emphasizing how this motivation strongly affects saving choices. Indeed, the literature emphasizes the importance of bequests in households' stated choices for life-cycle savings (Dyanan et al., 2002). The bequest motive also impacts consumer choices to use various financial products. In particular, in our analysis, we focused on tontine annuities and the new tounity product which could be good choices for pensioners.

As we have seen, however, any choice and in particular the choice of a certain financial product depends on the individual's attitude towards risk, for example, as verified in the paper (16), pensioners with a very low risk aversion prefer a tontine annuity, those with a very high risk aversion prefer a conventional annuity, while those with a medium risk aversion prefer the tounity.

Obviously, risk aversion also affects the demand for life insurance. In fact, households with high risk aversion demand more life insurance. It should also be mentioned that the demand for life insurance is also age-dependent: in the early years of family life, financial vulnerability is the motivation that convinces households to take out insurance, whereas in late adulthood it is the motivation for financial support that drives the purchase of a policy (Wang, 2019).

In this context, it is necessary to keep in mind the importance in the healthcare sector. We assume, as stated in paper (29) that life insurance impacts the growth of health expenditure and in particular negative growth in life insurance can stimulate health expenditure. This sector, which became crucial especially during the COVID-19 period, strongly affects, therefore, the consumer quality of life over time. In addition to all this, as seen in the papers (21) and (31), the recent COVID-19 pandemic will significantly stimulate demand for life insurance from policy buyers.

Both the state of health and the healthcare sector quality, obviously, affect longevity and provide individual consumption flow utility. An important role, then, is played by the interaction between consumption choices and investments in health over the lifecycle (Scholz and Seshadri, 2011). In fact, health has important positive effects on the amount of financial wealth a consumer decides to invest in stocks and financial products, while age has negative effects on such investment decisions (Lee et al. 2018).

Furthermore, retirement planning is a key component in achieving goals and fulfilling consumer expectations. In particular, retirement planning undergoes the influence of five aspects:
1. the individual’s financial situation;
2. living situation;
3. care provision;
4. health condition;
5. loneliness.

In addition, these concerns influence the individual’s perceptions on his or her ideal post-retirement situations in terms of financial standards (Apostolakis and Van Dijk, 2018). On the other

hand, many individuals find it difficult to plan for retirement, and this, very often, is due to a lack of financial literacy regarding pensions and old-age provision. Improved financial education could enable consumers to use the right financial instruments to better cope with retirement (Oehler and Werner, 2008). Moreover, as seen in papers (14) (20) (31) financial literacy enables a greater and more sustainable use of life insurance and financial products in general. Therefore, it is necessary for both the private and public sectors to pay more attention to financial literacy so that it can be used to guide more sustainable behavior by individual consumers.

Returning to the COVID-19 scenario, the pandemic had a very heavy impact on consumer behavior. In fact, the pandemic has induced a state of vulnerability in consumers that has inevitably been reflected in their savings, investment and spending decisions. This may lead to an increase in spending on products/services that are not normally perceived as necessary and may therefore also impact on the purchase of financial products (Yazdanparast and Alhenawi, 2022).

In this pandemic context, Bhatia et al. (2021) try to analyze consumers' life insurance purchase behavior and they highlight the need for consumers' adoption and acceptance of different technology-based services offered by life insurance companies, using the Technology Acceptance Model (Davis, 1986). All this will allow for the study of effective technology-based services that will encourage consumers to purchase and manage their life insurance policy from home in a possible pandemic situation.

At this point, we can indicate some research objectives for the future:

1. Analyze consumers' life insurance purchase behavior using behavioral economic theory (Masud et al., 2021);
2. Implement a new theoretical model using a theory-development-based review (Paul and Rosado-Serrano, 2019);
3. Verify the impact of technology-based services on consumers' life insurance purchase behavior using the Technology Acceptance Model (Bhatia et al., 2021).

In this paper, we present a review of studies in which a series of financial services was analyzed. This review, based on 33 documents, a series of rigorous, important and precise documents were analyzed, from which a series of data was obtained. From the analysis that was carried out, it was then possible to make some significant considerations. Through these, it was possible to determine which approach and content are most suitable for the consumption lifecycle scenario taken into consideration.

Moreover, the most important conclusion drawn from this paper is that the use of insurance services is fundamental in analyzed context because through these tools it is possible to eliminate the brevity and longevity risks and to improve the consumer quality of life.

In fact, although the life insurance sector has been experiencing phenomenal growth over the last years, not all consumers buy insurance and this occurs because insurance premiums are a well-established barrier to life insurance purchase (Segodi and Sibindi (2022)).

Furthermore, in the light of what we have seen in our discussions, it would be interesting to examine the introduction of insurance services in developing countries as well to see whether or not their introduction brings benefits. In particular, Abdul-Fatawu et al. (2019) examine the determinants of life insurance demand in the northern region of Ghana and show that less than 50% of people of insurable age own a life insurance policy. This confirms the need to make life insurance policies more attractive in order to increase the spread of such financial products. In order to do so, as stated in paper (3), it is necessary for institutions in LICs to persuade foreign insurers to enter domestic

insurance markets. The participation of foreign insurers can stimulate the development of local insurance markets.

Finally, through this paper, thus, we confirmed the importance of insurance services when they are applied in the lifecycle context. In the future, a more widespread purchase of insurance can be expected to improve consumption over the lifetime, particularly in the retirement period. In fact, as also stated by Barrieu et al. (2012), the increase of people's longevity can create a large impact on the economy and society at various levels and a better management of this risk is one of the key challenges of the coming decades. These challenges can only be addressed by moving to the concept of a longevity economy in which, by exploiting the fact that as individuals live longer and healthier lives, the negative economic effects of an ageing society can be offset through the positive effect of increased use of human capital. For this to happen, however, there needs to be a shift towards further expansion of healthcare and education and the emergence of new financial products (Scott, 2021).

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Appendix

Table A1: Manual selection process of 'target' publications for the literature review

N.	Authors	Years	Title Elimination	Abstract Elimination	Inclusion
1	De Nardi, Yang	2014			X
2	Lockwood	2018			X
3	Mahdzan, Peter Victorian	2013			X
4	Sauter	2014			X
5	Sauter et al.	2015		X	
6	Arun et al.	2012		X	
7	Lim, Kwak	2016			X
8	Fang, Wu	2020	X		
9	Hanewald et al.	2013	X		
10	Boyle et al.	2022		X	
11	Almås et al.	2020		X	
12	Joulfaian	2014		X	
13	Mai et al.	2020			X
14	Theloudis	2021	X		
15	Horioka et al.	2021	X		
16	Achou	2021	X		
17	Suari-Andreu et al.	2019		X	
18	Sulaiman et al.	2015		X	
19	Mathew, Sivaraman	2017	X		
20	Sibindi	2014	X		
21	Huffman et al.	2019	X		
22	Hassan	2022		X	
23	Luca	2018	X		
24	Effertz et al.	2017	X		
25	Chen et al.	2021		X	
26	Sibindi (continued)	2014	X		
27	Maurer et al.	2016	X		
28	Nasir et al.	2017	X		
29	Barrieu et al.	2012			X
30	Berg	2018	X		
31	Wissoker	2013	X		
32	Mohammed, Sulaiman	2018	X		
33	Lorson, Wagner	2014		X	
34	Yi et al.	2012	X		
35	Prokopjeva	2015		X	
36	Nerovnya et al.	2018		X	
37	Borel-Mathurin et al.	2018	X		
38	Baranauskas	2021	X		

39	Baškot	2013	X		
40	Heo	2019		X	
41	Vedani et al.	2017	X		
42	Schilling et al.	2020	X		
43	Hristova	2022			X
44	Blau	2016		X	
45	Ikeda, De Franca Carvalho	2022	X		
46	Schmeiser, Wagner	2016	X		
47	De Souza	2019	X		
48	Horioka	2019		X	
49	Su, Sherris	2012		X	
50	Lin et al.	2017	X		
51	Bohnert	2015		X	
52	Rödel et al.	2021	X		
53	Zhou et al.	2022			X
54	Andrés-Sánchez, Puchades	2021	X		
55	Arych, Darcy	2020	X		
56	Carbone, Infante	2014		X	
57	Tretiak	2017		X	
58	Shukla	2018			X
59	Canh et al.	2021	X		
60	Kumar	2019			X
61	Liu et al.	2021		X	
62	Ma	2014	X		
63	Eriksson	2014	X		
64	Nam, Hanna	2019		X	
65	Khurshed, Ghosh	2013	X		
66	Buric et al.	2017		X	
67	Lockwood	2012			X
68	Gârbo	2016	X		
69	Alonso-García, Sherris	2019	X		
70	Penna, Geels	2012	X		
71	Farhi, Werning	2013			X
72	Karlsson et al.	2019		X	
73	Hodula et al.	2021	X		
74	Wang	2019			X
75	Shen et al.	2020	X		
76	Andreeski et al.	2012		X	
77	Din et al.	2020	X		
78	Choi et al.	2015		X	
79	Wang	2022			X
80	Mare et al.	2019		X	
81	Geels, Penna	2015	X		

82	Lensberg et al.	2013		X	
83	Eling et al.	2021			X
84	Sliwinski et al.	2013			X
85	Kozarevic, Hodzic	2021		X	
86	Sharku et al.	2021	X		
87	Rivera, Azapagic	2016	X		
88	Peijnenburg et al.	2016			X
89	Sinha	2013	X		
90	Sudarto et al.	2016		X	
91	Hassard et al.	2014		X	
92	Harris, Yelowitz	2018			X
93	Oliynyk et al.	2017	X		
94	Milevsky, Salisbury	2015			X
95	Boholm, Arvidsson	2014		X	
96	Hugonnier et al.	2013	X		
97	Chen et al.	2019			X
98	Milevsky, Salisbury	2016			X
99	De Nardi et al.	2016			X
100	Masud et al.	2021			X
101	Chen et al.	2020		X	
102	Erosa et al.	2012	X		
103	Wang, Lee	2018			X
104	Han, Hung	2017	X		
105	Horioka	2014			X
106	Chang, Lee	2012			X
107	Harris, Yelowitz	2014		X	
108	Amudha et al.	2017	X		
109	Chakraborty	2016	X		
110	Siddiqui	2021	X		
111	Aase	2014			X
112	Adams et al.	2020	X		
113	Swee et al.	2021			X
114	Leong et al.	2017	X		
115	Chen	2021	X		
116	Seog, Hong	2019	X		
117	Wang et al.	2021		X	
118	Kabrt	2022		X	
119	Ahmed et al.	2021	X		
120	Chandrapal	2019	X		
121	Luciano et al.	2016			X
122	Shao et al.	2017	X		
123	Wong	2015		X	
124	Ondruška et al.	2020		X	

125	Christiansen et al.	2014	X		
126	Lee et al.	2018	X		
127	Makhdieva et al.	2017		X	
128	Notarnicola et al.	2017	X		
129	Iheanachor et al.	2021	X		
130	Sibindi	2022	X		
131	Eling, Kochanski	2013		X	
132	Bah, Abila	2022	X		
133	Venkatesan, Jacob	2019	X		
134	Ugarte	2018	X		
135	Shi et al.	2015		X	
136	Bhatia et al.	2021	X		
137	Chen et al.	2022	X		
138	Islam et al.	2021	X		
139	Trinh et al.	2016	X		
140	Krah et al.	2018	X		
141	Oscar Akotey, Abor	2013	X		
142	Hong	2012			X
143	Wang et al.	2022	X		
144	Abdallah et al.	2018	X		
145	West	2012	X		
146	Balboa et al.	2022	X		
147	Lee, Chang	2012	X		
148	Nicolai	2012	X		
149	Farooq et al.	2015		X	
150	Borscheid	2012	X		
151	Lusardi et al.	2017			X
152	Derbali, A., Jamel, L.	2018		X	
153	Shamsuddin et al.	2022	X		
154	Dzingirai, Chekenya	2020	X		
155	Laun, Wallenius	2015			X
156	Ramamoorthy et al.	2018	X		
157	Tomašević et al.	2021	X		