Date: 02/14

CURRICULUM VITAE AND LIST OF PUBLICATIONS

- **Personal Details**

Name**: Daniel Shapira**

Date and place of birth**: 13/04/67 Jerusalem, Israel**

Regular military service : **1988 - 1995**

Address and telephone number at work:

Department of Business Administration,

Guilford Glazer, Faculty of Management,

Ben Gurion University, Beer Sheva, Israel 84105

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Address and telephone number at home:

Zeev Haklai St. 4A, Jerusalem, Israel 96462

Phone number: 972-2-6417501

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- **Education**

1986 – 1988: B.Sc. in Physics and Mathematics (with distinction) , The Hebrew University.

The studies were held as part of the "Athuda Academith" program of the Israeli Defense Force.

1996 – 1998: M.Sc. in Physics , The Hebrew University .

Name of advisor: Prof. Ofer Biham

Title of thesis: “Neural Networks in Tracking Algorithms”.

1998 – 2004: Ph.D . in Physics , The Hebrew University .

Name of advisor: Prof. Ofer Biham

Title of thesis: “Dynamical Analysis of Quantum Computations”.

2005 – 2007: Post- Doctoral fellowship, Department of Business and Administration, Ben-Gurion University in Collaboration with

Prof. Oded Lowengart (BGU) and Prof. Jacob Goldenberg (HUJI).

- **Employment History**

2007- Present: Lecturer on tenure track position,
Department of Business Administration,
Guilford Glaze Faculty of Management, Ben-Gurion University.

2005- 2007: Lecturer, Department of Industrial Management Engineering
The Jerusalem College of Engineering.

1996 – 2004: Teaching Assistant, The Racah Institute of Physics,
The Hebrew University.

1988 – 1995: Air force service as a software engineering officer
Responsibilities included:
research, development and maintenance of multiple target tracking systems.

- **Professional Activities**

(a) Positions in academic administration

2010 – Present: Head of marketing area in the Business and Administration Department.

2013 – Present: Member of the Business and Administration Department teaching committee.

(b) Professional functions outside universities/institutions

2001– 2008: Military reserve

- Service on selection committee of Talpiot program.
- Advisor of engineering projects conducted by cadets of Talpiot in preparation of future service in research and development units. Those projects are conducted for credit as part of their academic education within the Hebrew University.

(c) 2011 – Present Reviewer for the following journals:

Journal of Marketing Research (JMR)

International Journal of Research in Marketing (IJRM)

Information Systems Research (ISR).

Operations Research (OR).

(d) 2010 – Present Reviewer at research proposals in ISF (Israel Science Foundation).

• **Educational activities**

(a) Courses taught

- Marketing management, MBA program, BGU
- Selected issues in marketing theory, MBA program, BGU
- Integrative seminar in marketing, MBA program, BGU
- Principles of marketing, B.Sc in Management, BGU

(b) Research students

- Current: Gil Peleg – Ph.D. thesis track, Jointly supervised with Prof. Oded Lowengart in Ben-Gurion University.
- Current: Taina Pudalov – M.Sc. thesis track, Jointly supervised with Prof. Oded Lowengart in Ben-Gurion University.
- Since 2009: Keren Haddad-Leibovich – Ph.D. student, jointly supervised with Prof. Jacob Goldenberg in the Hebrew University.

• **Awards, Citations, Honors, Fellowships**

2008 - 2010: Young Scientist fellowship,
The Yeshaya Horowitz Association through the Center for Complexity Science.
105,000$ for 3 years.
(The fellowship has been canceled in the last year because of the Madoff fraud.)

2006 – 2007: Post-Doctoral scholarship,
The Yeshaya Horowitz Association through the Center for Complexity Science.
45,000$ for 2 years.

2002: Racah Prize, The Racah Institute of Physics of the Hebrew University.

1999: Luxemburg Foundation Scholarship

1992: Commendation of excellence, The Israeli Air force central Control Unit.

1987: Dean prize for excellence, given by the Faculty of Natural sciences and Mathematics of the Hebrew University.

• **Scientific Publications**

(a) Refereed articles in scientific journals (h-index = 7)

1. Biham Eli, Ofer Biham, David Biron, Markus Grassl, Daniel A. Lidar and **Daniel Shapira**: "Analysis of Generalized Grover Quantum Search Algorithms Using Recursion Equations"**,** *Physical Review A 63***,** *012310* **(2001)**
   Journal Rank: A Journal Impact Factor: 2.866
   Number of citations: 9 (ISI) 57 (Google Scholar) .

2. **Shapira Daniel**, Shay Mozes and Ofer Biham: "Effect of Unitary Noise on Grover's Quantum Search Algorithm"**,** *Physical Review A 67,042301 (***2003***)*.
   Journal Rank: A Journal Impact Factor: 2.866
   Number of citations: 13 (ISI) 23 (Google Scholar).

3. Biham Ofer, Yishai Shimoni and **Daniel Shapira**: "Analysis of Grover`s Quantum Search Algorithm as a Dynamical System" *Physical Review A 68 ,022326 (***2003)**.
   Journal Rank: A Journal Impact Factor: 2.866
   Number of citations: 8 (ISI) 12 (Google Scholar).

4. **Shapira Daniel**, Ofer Biham, A.J. Bracken and Michelle Hackett: "One Dimensional Quantum Walk with Unitary Noise" *Physical Review A 68, 062315* **(2003)**.
   Journal Rank: A Journal Impact Factor: 2.866
   Number of citations: 27 (ISI) 31 (Google Scholar) .

5. Shimoni Yishai, **Daniel Shapira** and Ofer Biham: "Characterization of Pure Quantum States of Multiple Qubits Using the Groverian Entanglement Measure" *Physical Review A 69,062303 (***2004)**.
   Journal Rank: A Journal Impact Factor: 2.866
   Number of citations: 34 (ISI) 45 (Google Scholar).

6. **Shapira Daniel**, Yishai Shimoni and Ofer Biham: “Algebraic Analysis of Quantum Search with Pure and Mixed States" *Physical Review A 71 ,042320* **(2005)**.
   Journal Rank: A Journal Impact Factor: 2.866
   Number of citations: 3 (ISI) 7 (Google Scholar).

7. Shimoni Yishai, **Daniel Shapira** and Ofer Biham: "Entangled Quantum States Generated by Shor's Factoring Algorithm" *Physical Review A 72 ,062308* **(2005)**.
   Journal Rank: A Journal Impact Factor: 2.866
   Number of citations: 14 (ISI) 13 (Google Scholar).

8. **Shapira Daniel**, Yishai Shimoni and Ofer Biham: “Groverian Measure of Entanglement for Mixed States" *Physical Review A 73 ,044301* **(2006)**.
   Journal Rank: A Journal Impact Factor: 2.866
   Number of citations: 18 (ISI) 25 (Google Scholar).

9. Goldenberg Jacob, Oded Lowengart and **Daniel Shapira**: "Zooming In: Self Emergence of Movements in New Product Growth" , Marketing Science, 28(2), 274-292 **(2009).**
   Journal Rank: A+ Journal Impact Factor: 2.36
   Number of citations: 4 (ISI) 13 (Google Scholar) .

10. Dover Yaniv, Jacob Goldenberg and **Daniel Shapira**: "Network Traces on Penetration: Uncovering Degree Distribution from Adoption Data", *Marketing Science* , 31(4), 689-712 **(2012)**
    Journal Rank: A+ Journal Impact Factor: 2.36
    Number of citations: 4 (Google Scholar)
    +3. (The citations refer to the working paper form of the article.)

11. Malul Miki, **Daniel Shapira** and Amir Shoham: “Practical Modified Gini Index”, Applied Economic Letters, 20(4), 324-327 (2013).
    Journal Rank: A Journal Impact Factor: 0.24

(b) <u>Chapters in collective volumes</u>

1. Goldenberg Jacob and **Daniel Shapira**: "Complexity in marketing: modeling theory and applications" *article in* the Springer Encyclopedia of Complexity and Systems Science. *(* 2008*)*.

• **Presentations of papers at conferences and invited talks**

1. "Complex Systems in Marketing and Innovation Diffusion", Invited talk in as part of special workshop in honor of the 60th birthday of Prof. Sorin Solomon, Hebrew University (2014).
2. "The Ideal Beauty Effect on the Overweight Epidemic – Theory and Evidence", 35rd INFORMS Marketing Science Conference, Istanbul, Turkey (2013). http://www.marketingscience2013.com/
3. **"**Fashion Models and the Overweight Epidemic", Marketing Seminar, Tel-Aviv University (2013)
4. "Complex Systems in Marketing and Innovation Diffusion", The Business Management and Economics Joint Seminar, Bar-Ilan University (2013)
5. "Complex Systems in Marketing and Innovation Diffusion", University of Zurich, Zurich, Switzerland (2012) (Invited Talk)
6. "Fashion Models and the Overweight Epidemic", 34rd INFORMS Marketing Science Conference, Boston, USA (2012). http://www.bu.edu/marketingscience2012/
7. "Spatio-Temporal Clustering in Car Category Brand Switching", 34rd INFORMS Marketing Science Conference, Boston, USA (2012). http://www.bu.edu/marketingscience2012/
8. "Complex Systems in Marketing and Innovation Diffusion", Ono Academic (2012).
9. "Poverty (Tenure) Track", 33rd INFORMS Marketing Science Conference, Houston, Texas, USA (2011) http://business.rice.edu/uploadedFiles/Faculty_and_Research/A

cademic_Areas/Marketing/Informs_Marketing_Science_Conference_2011/MktSciConf_2011_FinalWeb.pdf

10. "Poverty (Tenure) Track", Marketing seminar, Tel-Aviv University (2011).

11. "Poverty (Tenure) Track", Marketing seminar, Hebrew University (2011).

12. "Poverty (Tenure) Track", International Journal of Arts and Sciences (IJAS) Conference, Rome, Italy (2010).

13. "Network Traces On The Dissemination: How Degree Distribution Can Be Estimated Based on the Penetration and How It Can Be Used to Improve Forecasting" , Workshop on Information on Networks (WIN), NYU Stern School of Business, New-York, USA, (2010) http://www.winworkshop.net/win2010//index.php

14. "Estimating the Growth of Innovation Decliners Based on Penetration Data.", 32nd INFORMS Marketing Science Conference, Cologne, Germany (2010). http://www.marketingscience2010.uni-koeln.de/01/index.asp

15. "Complex Systems in Marketing and the Emergence of Innovation Diffusion", Seminar in the Interdisciplinary Center, Herzliya (2010).

16. "The Effect of Social Hubs on the Diffusion of Innovation", Special issue on Social Contagion and Epidemics, 31st INFORMS Marketing Science Conference, Ann Arbor, Michigan, USA (2009). http://www.bus.umich.edu/mks2009/

17. "Not Invisible, Uncovering the Face of the Network", Special issue on Network Structure Processes, 31st INFORMS Marketing Science Conference, Ann Arbor, Michigan, USA (2009). http://www.bus.umich.edu/mks2009/

18. "Complex Systems in Marketing and the Emergence of Innovation Diffusion", Seminar in the department of agricultural economics and management, The Hebrew University, Rehovot (2009).

19. "Complex Systems in Marketing and the Emergence of Innovation Diffusion", Marketing Seminar, Tel-Aviv University (2009).
20. "Zooming In: Self Emergence of Movements in New Product Growth", The 5th European Conference on Complex Systems (ECCS), Jerusalem (2008). http://www.jeruccs2008.org/
21. "Zooming In: Self Emergence of Movements in New Product Growth", 10th Semi-Annual Israeli Workshop on Applied and Computational Mathematics, Tel-Aviv University (2008). http://www.wisdom.weizmann.ac.il/~vered/appmathtau08.pdf
22. "Zooming In: Self Emergence of Movements in New Product Growth", Special track on social networks, 30st INFORMS Marketing Science Conference, Vancouver, Canada (2008). http://www.marketscience2008.sauder.ubc.ca/
23. "Zooming In: Self Emergence of Movements in New Product Growth", 37th European Marketing Academy Conference (EMAC), Brighton, England (2008). http://emac2008.emac-online.org
24. "Zooming In: Self Emergence of Movements in New Product Growth", Workshop in the Institute for Scientific Interchange (ISI), Torino, Italy (2008).
25. "Zooming In: Self Emergence of Movements in New Product Growth", 2008 Israeli Operations Research Society (ORSIS), Shefayim (2008). http://www.bgu.ac.il/~orsis08/
26. "From the Individual Consumer to the Market as a Whole: Self Emergence of Sales Trends in New Product Adoption" , Open meeting day, The Center for Complexity Science (CCS), Bar-Ilan University (2007).

• **Research Grants**

2013-2015: *Academia – The Israel Science Foundation* The research: "Using Pre-Event Weak Signals for Predicting Sharp Global Upsprings."

As PI2 in collaboration with Jacob Goldenberg, The Hebrew University 110,000 NIS per year for 3 years**.** The amount was divided equally between HUJI and BGU.

2010-2012: *Academia – The Israel Science Foundation* The research:

"Uncovering Hidden Social Network Structures From Aggregate Growth Data."
As PI2 in collaboration with Jacob Goldenberg, The Hebrew University 101,000 NIS per year for 3 years**.** The amount was divided equally between HUJI and BGU.

2010: Research grant supported by the Ben-Gurion university president and the Guilford Glazer School of Management dean.

"The long term relationship between incentives and performance in academic research ."
In collaboration with Eran Manes, Ben-Gurion University
13,000 NIS **.**

• **Present Academic Activities**

Submitted and working papers:

1. Haddad-Leibovich Keren, Jacob Goldenberg and **Daniel Shapira**: "Estimating and Forecasting the Unobserved Rejection Curve based on Observed Adoption" To be resubmitted to the *Journal of Marketing Research* (JMR)

2. Manes Eran and **Daniel Shapira**: "Poverty (Tenure) Track" , Under review in *The European Economic Review* .

3. Grinstein Amir, Anat Tchetchik, Eran Manes, **Daniel Shapira** and Ronen Durst "Counting Articles or Impact? When Does Academic Research Provide More Value to Society?" Under review in *Health Affair*s.

4. Manes Eran and **Daniel Shapira**: "Incentives and Traps" , Under review in *the RAND journal of Economics*.

5. Goldenberg Jacob, Oded Lowengart and **Daniel Shapira**: "Integrating the Social Network to Diffusion Model and Evaluation of the Value of Hubs in the Adoption Process" Working Paper.

Research in progress:

1. **Fashion Models and the Overweight Epidemic**
   With: Amir Heiman and Oded Lowengart.

2. **Using Causality Chains in the Underlying Social Network for Predicting Sharp Global Upsurges**
   With: Jacob Goldenberg.

3. **Special Neighborhoods as Early Predictors of Innovation Adoption**
   With: Jacob Goldenberg. Sangman Han and Donald R. Lehmann.

4. **Using the Internet to Spot Secrets**
   With: Yaniv Dover, Jonah Berger and Jacob Goldenberg.
   Expected Date of Completion: 2014.

5. **The Effect of Taxation on Incentives for Entrepreneurship**
   With: Miki Malul and Mosi Rosenboim.

6. **Employing Bootstrapping Techniques to Retrieve Consumers Heterogeneity**
   With: Sanjay Gosh and Oded Lowengart

7. **Spatio-Temporal Clustering in Car Category Brand Switiching**
   With Keren Haddad-Leibovich and Jacob Goldenberg.

8. **Online Social Networks and the Emergence of Reputation and Fame**
   With: Florian Stahl, Andreas Lanz and Jacob Goldenberg .

• Synopsis of Research:

My main research focuses on complex systems in marketing. I have been investigating a variety of aspects that deal with the emergence of the collective behavior of markets on the basis of modeling individual-level social interactions among consumers. This work involves the development of theoretical quantitative models and empirical analysis of big data. In my research, I employ interdisciplinary ideas and methodologies inspired by the field of statistical mechanics.
In general, my areas of research can be divided into three main clusters, as described here.

Social Networks and Innovation Dissemination

In this group (which encompasses most of my research activity), I have focused on the analysis of the interplay between innovation dissemination processes and their underlying social network structures. We (my research fellows and I) hold the thesis that as new products are propagated over the social network that builds the market, one can deduce implications on the dynamics of innovation diffusion from the structure of the underlying social network and vice versa.

In Goldenberg, Lowengart, and Shapira (2009), we proposed an individual-level approach to diffusion and growth models. In our study, we referred to a unit of analysis, which is a single consumer (instead of segments or markets), and used granular sales data (daily) instead of smoothed (e.g., annual) data, as is more commonly used in the literature. By analyzing the high volatility of daily data, we were able to show how changes in sales patterns can self-emerge as a direct consequence of the stochastic nature of the process. Our contention is that the fluctuations observed in more granular data are not noise, but rather they consist of accurate measurements and contain valuable information. By stepping into the noise-like data and treating it as information, we were able to generate better short-term predictions, even at very early stages of the penetration process. Using a Kalman-Filter-based tracker, we demonstrated how movements can be traced and how predictions can be significantly improved.

In Dover, Goldenberg, and Shapira (2012), we showed how networks modify the diffusion curve by affecting its symmetry. We demonstrated that a network's degree distribution has a significant impact on the contagion properties of the subsequent adoption process and proposed a method for uncovering the degree distribution of the adopter network underlying the dissemination process based exclusively on limited early-stage penetration data. While previous works have used models to show that a given pattern of adoption can be explained by network effects (although alternative explanations can, in principle, be offered), in this paper, we proposed and empirically validated a unified network-based growth model that links network structure and penetration patterns. Specifically, using external sources of information, we confirmed that each network degree distribution identified by the model matches the actual social network underlying the dissemination process. We also showed empirically that the same method can be used to forecast adoption using an estimation of the degree distribution and the diffusion parameters at an early stage (15%) of the penetration process. We confirmed that these forecasts are significantly superior to those of three benchmark models of diffusion.

In Goldenberg, Lowengart, and Shapira (to be submitted), we developed an analytical framework in which the social network is integrated into the aggregated level innovation dissemination dynamics. Then we used this framework to study the effect of social hubs on the penetration of new products. Our results demonstrate that seeding hubs has a differential accelerating effect on innovation dissemination measured by the additional net present value (NPV) of potential future sales. On the basis of closed-form solutions, tapping into a category of social influence that is characterized by the number and intensity of social ties, we found that a hub's "area of influence" has greater impact on NPV than does its tie intensity. Focusing on the evolution of adoption in a segment of hubs, we showed that the product life cycle in this segment is about two to three times shorter than the life cycle in the entire market. We found that the ratio of hub-to-non-hub degree has the most significant impact on

reducing life cycle length, and that this effect exceeded other effects (i.e., the average proportion of hubs among an individuals' neighbors, the intensity of external influence, or word-of-mouth communications). We examined the proposed analytical framework using empirical data from an online social network.

In Haddad, Goldenberg, and Shapira (to be submitted), we took a slightly different approach. Instead of focusing on new product adopters, we studied innovation rejecters—those people who consider yet eventually decline to adopt a new product. These rejecters represent "lost opportunities," highlighting marketing mix inefficiencies. Although usually unobserved, rejecters leave traces on the adoption pattern by diminishing the pool of potential adopters. In this paper, we introduce a model for estimating the growth of rejecters based on observed adoption data. Using data on adopters and rejecters for a set of software products, we found a fairly high proportion of rejecters. We also found negative forces to be stronger than positive ones in driving rejection growth. These findings suggest in order to avoid erroneous decisions, marketing-plan evaluations should include rejecter estimations.

In a study that I am currently conducting with Jacob Goldenberg (which is being funded by the ISF), we are running three projects with the aim of developing models based on network theory and weak signal accumulations to detect early information that precedes large-scale events. Our objective is to predict such global events before they occur, based on a very small sample of weak signals. In the first project, using the theoretical notion that in the case of successful new product penetration, strong contagion effects will take place in the adoption process, we have developed a measure that captures the emergence of "causality chains" in the underlying social network that can be used for predicting sharp global upspring and early identification of takeoff occurrence. In the second project, we intend to look at sufficiently large clusters which are also dense, where we expect that at early stages in the process, the new product growth in such clusters will evolve faster than the apparent growth in the entire market. On the other hand, in the case of a product failure, the contagion effect would be minimal and, hence, the innovation growth dynamics are not expected to be faster in dense clusters compared to the entire market. In the third project, we plan to allocate honey pot web pages where weak signals are accumulated before events occur (e.g., assignations, political scandals, mergers and acquisitions, and surprising launches of innovations). In a preliminary study, we selected a group of events (taken from a list from *Wikipedia*) that were planned by a handful of people and where information was highly secured (i.e., political assassinations). Then we used the *Wikipedia* page visit statistics tool to measure search activity. We employed Event Study Analysis to test whether activity in some window prior to an event was abnormal relative to some normal baseline estimation period. We found that 13.3% of the cases listed between 2008–2009 exhibited an extreme deviance above the mean immediately prior to the event, with an abnormal activity of more than 10 standard deviations above the average. (We examined Google news, Google blogs, and other Internet news sites to rule out the possibility that external events or news coverage could be driving abnormal pre-event search activity.)

Information, Social Interactions and the Overweight Epidemic

In this group of works, I am conducting with my research fellows Oded Lowengart, and Amir Heiman, we explore how exposure to certain types of information and social interactions among people affect individual calorie consumption and, hence, from an aggregate level perspective, contribute to the emergence of the overweight epidemic. In research now in its last stages, we argue that the thin ideal female model has an indirect accelerating effect on the overweight epidemic among youngsters. We propose an economic-based theory that captures an interaction between two reference weight points: that of the ideal beauty (thin body size) and of the median weight of the population. Both affect an individual's decisions about calorie consumption. When these two reference points are far apart, the thin ideal point becomes an unreachable goal and, hence, loses its ability to be a restraining force against weight gain. This leads to a continuous increase in the median weight of the entire population. We provide supportive evidence to our theory based on large-scale historical data from the US National Health and Nutrition Examination Survey (NHANES),

as well as food industry data and ideal beauty body size proxies over the years since the early 1960s until now. While in the current setup of our research, we are considering myopic consumers, in the next step, we intend to relax this assumption and assume that the individual makes a conscious choice of lifestyle involving risk that takes into account both future health considerations and assessments of future development of innovative drugs and medical treatments. In other future research, we intend to explore the interplay between evolving popular diet programs (as measured for instance in Google Trends) and the prevalence of overweight and obesity.

Incentives, Performance and Policy

In this body of work, I have been studying aspects in the interplay between incentives and performance in organizations and their policy implications. In Manes and Shapira (submitted), we have proposed a theory that captures the interplay between incentives and performance of research departments in academic institutions where peer effects are present. Building on the notion of threshold externalities, our model traces the dynamic evolution of two separated regimes; one in which innovative high impact research dominates and peer effects are intensive, and the other in which incremental research prevails and peer effects are weak. In both regimes, promotion standards are determined endogenously. The underlying rationale is as follows: if an individual researcher's close surrounding is awarded with incentives for engaging in innovative research projects, then beyond some (team ability) threshold, the reduction in the time cost and the probability of success is pronounced enough to make his private net benefit from such activity engagement outweigh the alternative opportunity. Hence, the stronger the peer effects, the more encouraged is the individual researcher to be involved in innovative research, which further increases team ability through learning, and so forth. Due to the intergenerational learning externality present in the dynamic version of the model, the economic environment will then converge to a steady state, characterized by a high- quality research product and strong peer effects. However, if the economic system starts below the threshold and convergence into an incremental research regime occurs, a focus on bulk production of incremental research substitutes for innovative research and peer effects are weak. In Grinstein et al. (submitted), we empirically demonstrate the existing tradeoff between an approach promoting high-volume research productivity and one promoting high-impact research productivity in the case of biomedical research. This question is challenging because translating research outcomes into measurable social value is often difficult. Biomedical research is an exception because physicians at university hospitals produce both research and medical care outputs. Based on a cohort of 50 U.S-based university hospitals across three central specializations (cardiology, oncology, and orthopedics) involving 4,330 physicians, we empirically have demonstrated that high-impact research has a significant and robust direct effect on the quality of care, whereas the high-volume research per se has no direct effect at all.

In another new, research project I am conducting with my research fellows Miki Malul, Mosi Rosenboim, we study a rather different aspect of the interplay between incentives and performance, wherein we examine the effect of taxation on incentives for entrepreneurship. Our study is based on data of actual entrepreneurs collected with the assistance of the Bengis Center for Entrepreneurship and Hi-Tech. Our thesis is that at least in the early stages of the entrepreneurship establishment, setting high tax rates on high incomes does not necessarily affect entrepreneurial incentives. Hence, overall, the existing relatively low tax rates on extremely high incomes may indicate an inefficient equilibrium as those "lost" tax revenues could have been redistributed to finance social expenditures without harming economic incentives. In Malul, Shapira, and Shoham (2013), we developed a practical modified Gini index for estimating the level of income inequality in countries that takes into account the moderating effect of the in-kind government benefits. The proposed modified Gini index can be calculated using just the regularly available data for each country inclusive of the original Gini coefficient, government consumption expenditures, GDP, and total tax revenue as a percentage of GDP. The modified Gini index enables a more precise calculation of the level of inequality affording better comparisons between countries. For

example, Italy which is ranked 27th according to the traditional Gini index among OECD countries is 17th according to the modified index, demonstrating how in-kind government benefits significantly reduce the actual inequality despite the relatively high level of inequality in the original income distribution.