Bargaining Problem: Does Disagreement Point Result from Value Control or Value Deprivation? or, Does Value Control (or Value Deprivation) Result from Disagreement?- A Win-Win-Win Papakonstantinidis Approach

Leonidas A. Papakonstantinidis

Honorary Professor University of Bandar-Lampung (UBL) INDONESIA

	ABSTRACT
<p>2016 Research Leap/Inovatus Services Ltd. All rights reserved.</p> <p>DOI: 10.18775/jibrm.1849-8558.2015.43.3003 URL: http://dx.doi.org/10.18775/jibrm.1849-8558.2015.43.3003</p>	<p>The article concerns the Convergence policy as a prospect for the future economic view, as it deals with the value deprivation. Value deprivation arises due to the lack of goods-values which are available to a higher economic class of consumers as a point of disagreement in a cause-effect relationship or even vice versa, within a huge bargain between 2 having opposing interests, as the result of value control. State of deprivation, Value destruction, and disagreement point are examined separately, and so is the methodological tool, called the “win-win-win Papakonstantinidis model” intended for investigating the impact of the value control to the disagreement point I. Value destruction can be turned into a Value creating opportunity. thus the disagreement point. The win-win-win Papakonstantinidis model is used as a methodological tool for examining the impact of the control value to the disagreement point. A strong correlation between disagreement and value control is found, through the research on 30 CEO’s all over Europe</p>
<p>Keywords: Bargaining Problem, Value Control, the win-win-win papak. equilibrium, the disagreement point, Shared Value, value deprivation, cooperation, the “angels point” Community Cohesion</p>	

1. Introduction

Convergence policy is a place-based policy which plays a role in the COMMUNITY as a total bargaining cohesion. The win-win perception is based upon whether each side participating in a dispute feels they have won. Since both sides benefit from such a scenario, any resolutions to the conflict are likely to be accepted voluntarily. The process of integrative bargaining aims to achieve, through cooperation, win-win outcomes. On the opposite, the “win-win-win Papakonstantinidis model” is-or, may be- an extension to the win-win model; based not only on the perception of the participants in the dispute over if they have won, but even more if the participating parties feel that their community has also won, in the context of a social contract (moral contract, beyond the strict interpretation of the

Law: that’s the limit of the sensitization process toward the absolute social cohesion-the “angel’s point”

There is an ongoing debate among Economists historians and Information Specialists:

- i. As to what role the crash played in subsequent economic, social, and political events. The Economist argued in a 1998 article that the Depression did not start with the stock market crash¹, nor was it clear at the time of the crash that a depression was starting. They asked, "Can a very serious Stock Exchange collapse produce a serious setback to industry when industrial production is for the most part in a healthy and balanced condition?" They argued² that there must be some setback, but there was not yet sufficient evidence to prove that it would be long or would necessarily produce a general industrial depression of that of 1929³

¹ "Economics focus: The Great Depression", The Economist (September 17, 1998)

² "Reactions of the Wall Street slump", The Economist (November 23, 1929)

³ Bone, James. "The beginner's guide to stock markets". The Times. London. Archived from the original on May 25, 2010. Retrieved January 29, 2012. The most savage bear market of all time was the Wall Street Crash of 1929–1932, in which share prices fell by 89 per cent.

- "Stock Market Crash of 1929". Encyclopædia Britannica. Retrieved January 29, 2012.
- Black Tuesday: The Wall Street Crash of 1929 (10-29) also known as the Stock Market Crash of 1929 or the Great Crash, is a major stock market crash that occurred in late October 1929. It started on October 24 ("Black Thursday") and continued until October 29, 1929 ("Black Tuesday"), when share prices on the New York Stock Exchange collapsed

- ii. As to what the point on a crucial “turnover” of the capitalist economic model. In such a case, could we suggest “new forms” or new Equilibria? The answer is YES- Let’s start from the COMMUNITY as an imaginative third player, in a bargain of two - that means the COHESION of any type, around a FLAG THEME.

Since 2002-08-14-the first presentation in Visby University-SW till now the “win-win-win Papakonstantinidis model” seems to have changed many times, but the core remains the same:

Generally, the philosophy of “Action-Reaction” could, especially nowadays, be the “Theory of all”

Any living (not only human) “activity” is dominated by the “action-reaction Rule”. Even the baby crying is a reaction against their parents to provide more care

From this point of view, the “game theory” approach, and even more the “bargaining theory” may fit a new perception

On this “step” the “win-win-win Papakonstantinidis model” is a concept relating to socialized human relations, taking into consideration the COMMUNITY’s “profit” coming from any bargain between the two bargainers (A-B)⁴

“Community”-the “C” Factor participates-as a “third person”-at any bargain between two parties²

This participation is visible or invisible, defining depending on the legal framework for negotiation for 2 persons involved in any bargain. So far, Community’s involvement is invisible, neutral and ends in legislative intervention, eg labor law which

defines the legal framework within the which employers and workers determine, for example, the remuneration of the latter. ends in legislative intervention, eg labor law which defines the legal framework within the which employers and workers build a relation for example, the payoff of the latter

In the bargain between two parties, some of 2-persons bargains, the community participation is more visible, for example, to every 2-person financial negotiation, the Community (the hereinafter the State here) clearly participates in a “share” of this Negotiation. However, this is not enough to describe how we imagine such “community participation”

By this, we mean the coincidence of the following

1. Arbitration
2. Mediation
3. “PuttingInitiation” of the moral negotiation-free will negotiation
4. As the overall GLOBAL: Climate change behavior, towards the CSR Principles/free will-see at the scheme

Interaction⁵ does truly exist in every live relationship. It’s the payoff for “dealing with” the others’ system. Interaction is a kind of action that occurs when two or more objects have an effect upon one another. The idea of a two-way effect is essential in the concept of interaction, as opposed to a one-way causal effect. A closely related term is interconnectivity, which deals with the interactions of interactions within systems: a combination of many simple interactions can lead to surprising emergent phenomena. Interaction takes on different meanings in different sciences. Changes can also involve interaction⁶ As every thought, any behavior, in any place, reacts to real human needs and therefore behaviors, I will examine this reaction,

⁴ Papakonstantinidis LA “Bargaining and Local Development” BOOK Edit, 2007 Dardanos SA

- https://www.researchgate.net/publication/330181167_Political_Economy_and_Decision_Making_Methodical_Reflections_on_the_WWW_Papakonstantinidis_Bargaining_Model
- https://www.researchgate.net/publication/328217960_Stakeholder_Theory_Integrative_Business_Ethics_by_the_win-win_papakonstantinidis_model
- https://www.researchgate.net/publication/329708054_CSR_An_application_of_the_win-win_papakonstantinidis_model

⁵

- Card, Stuart K.; Thomas P. Moran; Allen Newell (July 1980). "The keystroke-level model for user performance time with interactive systems". *Communications of the ACM*. 23 (7): 396–410. doi:10.1145/358886.358895.
- Carlisle, James H. (June 1976). "Evaluating the impact of office automation on top management communication". *Proceedings of the June 7-10, 1976, national computer conference and exposition on - AFIPS '76. Proceedings of the June 7-10, 1976, National Computer Conference and Exposition*. pp. 611–616. of 'human-computer interaction' appears in references

- Suchman, Lucy (1987). *Plans and Situated Action. The Problem of Human-Machine Communication*. New York, Cambridge: Cambridge University Press. Retrieved 7 March 2015.
- Dourish, Paul (2001). *Where the Action Is: The Foundations of Embodied Interaction*. Cambridge, MA: MIT Press.
- Grudin, Jonathan (1992). "Utility and usability: research issues and development contexts". *Interacting with Computers*. 4 (2): 209–217. . Retrieved 7 March 2015.
- Chalmers, Matthew; Galani, Areti (2004). *Seamful interweaving: heterogeneity in the theory and design of interactive systems. Proceedings of the 5th Conference on Designing Interactive Systems: Processes, Practices, Methods, and Techniques*. pp. 243–252. . Retrieved 7 March 2015.
- Barkhuus, Louise; Polichar, Valerie E. (2011). "Empowerment through seamfulness: smart phones in everyday life". *Personal and Ubiquitous Computing*. 15 (6): 629–639.
- Rogers, Yvonne (2012). "HCI Theory: Classical, Modern, and Contemporary". *Synthesis Lectures on Human-Centered Informatics*. 5 (2): 1–129

⁶ Human-computer interaction (HCI) researches the design and use of computer technology, focused on the interfaces between people (users) and computers. Researchers in the field of HCI both observe the ways in which humans interact with computers and design technologies that let humans interact with computers in novel ways. As a field of research, human-computer interaction is situated at the intersection of computer science, behavioral sciences, design, media studies, and several other fields of study

using 'strategies' prism, mainly individual strategies. In such a system, conflict is the only conclusion.

Suppose that some human reaction must have, it is forced to have, a social welfare step. Since 2002- an alternative price strategy approach has been taken: Any reactive, instant reflection winning strategy (DECISION) could be understood through the lens of the game theory-especially, the bargaining theory, and Nash's win-win solution. [This allows us to conceive human reaction as a game, especially as a part of the whole holistic equilibrium of games, in line with Nash's hypothesis AND Pareto efficiency constraints]. That is the "win-win-win Papakonstantinidis model" John Nash' noncooperative game theory with its famous N.E provides an answer, but this is not enough for a meta-capitalist global society. Capitalist society has adopted the bipolar system of thinking (black-white, 0-1, the religious "filioque" etc). In such a system, conflict is the only conclusive answer.

In a post-capitalist system, or inside the capitalism, a third possibility based on reaction may facilitate human relations. The launched "win-win-win Papakonstantinidis model", may pose some new ideas for a meta-capitalist economic organization cooperative bargaining. Game theory has often been concerned with whether expected bargaining outcomes could be altered by certain contractions of the feasible set. There is strong theoretical support on both sides - while there are allocation rules that require that certain contractions of the feasible set are immaterial in terms of the predicted final outcome (Nash, 1950), there are also others that suggest that those very contractions should significantly alter the predicted outcome (Kalai-Smorodinsky, 1950). Nydegger and Owen (1974) provided empirical support for the former set of allocation rules by experimentally demonstrating that certain contractions of the feasible set leave the expected bargaining outcome unchanged. Since then, the ineffectiveness of such contractions has never been questioned.⁷ From this point of view, "reaction concept" is met within a number of the scientific fields as, Management, Marketing, Sociology, Decision Making, Strategy, History, folklore study, Psychology, Medicine, Biology, Biochemistry, the Science of Culture and Plants, the Science of livestock, Engineering, the Science of Electricity, Astronomy, Physics, Space Aeronautics, Philosophy, Arts, Scenography, the Art of Movie or Theatre Actors, Sculpture, Art, Painting, "Consumer Attitude, Brand Awareness, Brand Association. Perceived Quality and Brand Loyalty scales are included in the "behavioral economics". From this point of view, it could be possible to see-alternatively-all these expressions [Consumer Attitude, Brand Awareness, Brand Association....) as a part of "reaction behavior" that matches the whole LIFE and its evolution.

Within this frame, GAME THEORY seems to fit better than any other. As "competition" does not fit anymore to our "meta-capitalist era", a more "socialized economic environment" in a fairer world with more equal opportunities is feasible. This is not a wish, this is the reality.

There are some people who are often deprived of common goods available to a higher economic class of consumers. Those who were value deprived used mud instead of soap; charcoal instead of toothpaste; having only one change of clothes instead of a wardrobe; no recourse to the quality or even minimum education; not getting two square meals a day; having to work in someone's house and being deprived of an alternative future.

Many of these disadvantages may be converted to opportunities. For example, producing small bars of soap, sachet shampoo or toothpaste, etc. or products with fewer features at lower prices. I will leave the reader to think through these. Value deprivation is based on the premise that the value of an asset is equivalent to the loss that the owner of an asset would sustain if deprived of that asset. So imagine the deprival value of lost education.

Much of deprivation happens when people who can do something have closed their consciousness or trained it to ignore such things. Ayn Rand in 1966 wrote in *The Voice of Reason: Essays in Objectivist Thought*: Men's consciousness is the least known and most abused vital organ the loss of control of one's consciousness is the most terrifying of human experiences...and yet men abuse, starve and subvert their consciousness...She says this leads to the question, Who is to blame? All those that are afraid to speak, or who know better are willing to compromise, temporize and thus to sanction such happenings?

For Example, Value Deprivation occurs when you are clearly eligible to be selected for a national team, but because of vested interests or quotas, you are not selected. Yet another example is a worthy candidate who cannot get admission to a good school because of reservations. Or worse still, rich people who 'bought' admissions for their kids to the detriment of deserving but less connected candidates.

An orphan, deprived of parental love is an example of value deprivation. A worker being paid less than minimum wages in cash by greedy industrialists who use their black money for this purpose and simultaneously deprive the worker of social benefits apart from paying lower wages. During demonetization in India, these industrialists sacked the workers depriving them of jobs, the economy of growth; and then

⁷ Any human on even more, living activity is included in the "reactive decision, or behavior For example, When a baby cries, he actually reacts with his parents, drawing their attention to him.

blamed their actions on the government. Had they been paid by the check, this would probably not have happened.

A poor guy who is unable to get recourse to justice or bureaucrats is value deprived. Do the clerks and bureaucrats notice this? Value deprivation occurs when you live in a village in India, and have no opportunities. You reconcile yourself to this and do not want to do something or become someone. Then we in big cities wonder why these people are that way and not ambitious.

I met a villager who wanted to get out of this and decided to send his son to Canada. They went to touts in a bigger city, who arranged admission in unknown colleges and with large payments. This is one consequence of value deprivation: making people do things out of desperation⁸. The worst example is the financial Community, who in their greed have perpetuated great value deprivation in the guise of value creation. By making people who were marginal buy homes with cheap mortgages without worrying about the buyers viability or the mortgage viability, they first deprived such people of long term value and peace of mind, and finally caused value destruction for them and society in a big way (value was destroyed for 6 million people who lost their homes and 8 million people who lost their jobs as an aftermath of the 2008 financial crisis.

2. Definitions

2.1 Value Deprivation

Value deprivation: The state of being kept from possessing, enjoying, or using something; the state of being deprived

Removal value is based on the assumption that the value of an asset is equivalent to the loss that would be retained by the owner of an asset if deprived of the asset. Imagine the value of losing an education.

The disagreement point d is the value that parties can expect to receive if negotiations break down. This could be considered as a focal equilibrium that both players could expect to play. This point directly affects the bargaining solution, however, so it stands to reason that each player should try to choose his disagreement point in order to maximize his bargaining position.

2.2 Consumer Surplus

Consumer surplus is the amount exceeding an equilibrium price the consumer is willing to pay. The equilibrium price is an idealized price, in which the demand for the good equals its

supply. If the equilibrium price is known, the consumer surplus can be calculated, using the demand equation. Basically, it's the number of money consumers are saving over the equilibrium price. **Consumer Surplus and the Demand Equation**⁹

Economists calculate the consumer's demand, according to the law of diminishing marginal utility. How much is the consumer willing to pay for one additional good depends upon how much of this good the consumer already has? Since, according to the terms of the calculation, the demand for one more good decreases with each sale, the acceptable price for that good necessarily diminishes with each sale as well.

A graphic representation of this phenomenon, called the demand equation, shows a straight line across the horizontal axis, representing the fixed price of the good. Above that fixed price line is a curved line representing the additional amount the consumer would willingly pay above the actual sales price. Since, according to the law of diminishing utility, this acceptable price diminishes with each sale, this line representing the maximum acceptable price slopes downward to the right.

The area on the graph above the sales price and below the downward-curving acceptable price represents the consumer surplus, the difference between the acceptable price and the

⁸ Gautam Mahajan (2019). Value Deprivation- CVF Article of the week

⁹ Patrick Gleeson, Ph. D.,; Reviewed by Jayne Thompson, LLB, LL.M.; Updated February 01, 2019 How to Calculate Consumer Surplus From a Demand

Equation <https://smallbusiness.chron.com/calculate-consumer-surplus-demand-equation-22167.html>

lower fixed price actually paid. Demand equation is used on the market for determining the consumer surplus.

Overview of Required Calculations

To determine the consumer surplus using the demand equation, you'll first need to establish the equilibrium price – the price where consumer demand is fully satisfied and all goods are sold. An online calculator that makes the computation is available in the References.

Once the equilibrium price is known, you can then use the information to calculate the demand equation. Some diminishing demands are linear and decline at a fixed rate. The calculation for a linear demand function is included in the References.

Other demand functions are nonlinear: the maximum acceptable price decline is described not by a straight line, but by a curving downward line. This equation requires either integral calculus or a reasonable approximation of the consumer surplus using the method described below.

2.3 Control and Deprival value

What happens when, given the circumstances, or due to the lack of control, value is not available to you?

Deprivation value is based on the premise that the value of an asset is equivalent to the loss that the owner of an asset would sustain if deprived of that asset. So imagine the deprival value of lost education¹⁰.

Much of this happens because people who can do something have closed their consciousness or trained it to ignore such things. Ayn Rand in 1966 wrote in *The Voice of Reason: Essays in Objectivist Thought*¹¹:

“Men’s consciousness is the least known and most abused vital organ the loss of control of one’s consciousness is the most terrifying of human experiences and yet men abuse, starve and subvert their consciousness She says this leads to the question, Who is to blame? All those that are afraid to speak, or who know better are willing to compromise, temporize and thus to sanction such happenings? ”

On the other hand, in bargaining theory, a “disagreement point” or “threat point” represents the policy which is implemented if no agreement is reached. Typically, it is bad for both sides, but may be worse for one. The disagreement point has a profound impact on the outcome of negotiations, even if it never comes to pass. (In theory-land, say in Nash or Rubinstein bargaining,

there is never disagreement, but the threat of disagreement is a crucial determinant of the outcome.) Obviously, in a current government situation, the disagreement point is a shutdown. TV pundits have been speculating for weeks about which side this hurts more. But this isn’t the only imaginable disagreement point. The system could decree if, say, last year’s budget gets extended automatically if no new budget is passed. This would drastically impact the negotiations (favoring the Democrats in this particular case.) My question to anyone who knows the history of government better than I do is: How did we come to have a system where the government shuts down unless a new budget is passed each year? And do other countries differ on this point

2.4 Pareto Efficiency

Pareto efficiency or Pareto optimality is a state of allocation of resources from which it is impossible to reallocate so as to make any individual or preference criterion better off without making at least one individual or preference criterion worse off....

2.5 Bargaining Problem

The two-party **bargaining problem** examines how two agents share a surplus that they can jointly generate. It is, in essence, a payoff selection problem. In many cases, the surplus created by the two players can be shared in many ways, forcing the players to negotiate which division of payoffs to choose. There are two typical approaches to the bargaining problem. The normative approach studies how the surplus should be shared. It formulates appealing axioms that the solution to a bargaining problem should satisfy. The positive approach answers the question of how the surplus will be shared. Under the positive approach, the bargaining procedure is modeled in detail as a non-cooperative game¹² We now study the classic two-person bargaining problem enunciated by Nash. According to Nash, the term bargaining refers to a situation in which:

- individuals have the possibility of concluding a mutually beneficial agreement
- there is a conflict of interests about which agreement to conclude
- no agreement may be imposed on any player without that player’s approval.

The following assumptions are implicit in Nash’s formulation: when two players negotiate or an impartial arbitrator arbitrates, the payoff allocations that the two players ultimately get should depend only on:

- the payoffs they would expect if the negotiation or arbitration were to fail to reach a settlement, and
- on the set of payoff allocations that are jointly feasible for the two players in the process of negotiation or arbitration.

¹⁰ Gautam Mahajan (2019). Value Deprivation- CVF Article of the week

¹¹ *The Voice of Reason: Essays in Objectivist Thought* (The Ayn Rand Library) Paperback – June 30, 1990

by Ayn Rand (Author), Leonard Peikoff (Editor, Introduction) <https://www.aynrand.org/novels/the-voice-of-reason>

¹² Nash, John (1950). "The Bargaining Problem" *Econometrica* **18** (2): 155–162

The two-person bargaining problem has been applied in many important contexts including:

- Management labor arbitration where the management negotiates contracts with the labor union
- International relations, where two Nations or two groups of Nations work out agreements on issues such as nuclear disarmament, military cooperation, anti-terrorist strategy, bilateral emission control initiatives, etc.
- Duopoly marked games where two major competing companies work out adjustments on their production to maximize their profits¹³

Especially,

The two-person bargaining problem consists of a pair (F, v)

where F is called the feasible set and v is called the disagreement point.

- F , the feasible set of allocations, is a closed, convex subset of R^2
- The disagreement point $v = (v_1, v_2) \in R^2$ represents the disagreement payoff allocation for the two players. It is also called the status-quo point or the default point. This gives the payoffs for the two players in the event that the negotiations fail. It may be noted that v is invariably chosen to belong to the feasible set F though this is not a mandatory technical requirement.
- The set $F \cap \{(x_1, x_2) \in R^2 : x_1 \geq v_1; x_2 \geq v_2\}$ is assumed to be non-empty and bounded.

Justification for the Assumptions

- F is assumed to be convex. This can be justified as follows. Assume that the players can agree to jointly randomized strategies (correlated strategies). Consequently, if the utility allocations $x = (x_1, x_2)$ and $y = (y_1, y_2)$ are feasible and $0 \leq a \leq 1$

then the expected utility allocation $ax + (1 - a)y$

can be achieved by planning to implement x with probability a and to implement y with probability $(1 - a)$

- F is assumed to be closed (that is, any convergent sequence in F will converge to a point that belongs to F). This is a natural topological requirement. If we have a sequence of allocations belonging to F and the limiting allocation does not belong to F , then we have an undesirable situation that is not acceptable.

- The set $F_n \left\{ (x_1, x_2) \in R^2 : x_1 \geq v_1; x_2 \geq v_2 \right\}$ is assumed to be non-empty and bounded. This assumption implies that there exists some feasible allocation that is at least as good as a disagreement for both players, but unbounded gains over the disagreement point are not possible. Both of these requirements are reasonable.

Nash's Axioms¹⁴

John Nash used a brilliant axiomatic approach to solve this problem. He first came up with a list of properties an ideal bargaining solution function is expected to satisfy and then proved that there exists a unique solution that satisfies all of these properties. The following are the five axioms of Nash:

1. Strong Efficiency
2. Individual Rationality
3. Scale Covariance
4. Independence of Irrelevant Alternatives (IIA)
5. Symmetry

Figure 1: Illustrating strong efficiency and individual rationality

¹³ Y. Narahari (October 2012) "COOPERATIVE GAME THEORY The Two Person Bargaining Problem" Department of Computer Science and Automation Indian Institute of Science Bangalore, India - Lecture Notes Game Theory

¹⁴ Y. Narahari (October 2012) "COOPERATIVE GAME THEORY The Two Person Bargaining Problem" Department of Computer Science and Automation Indian Institute of Science Bangalore, India - Lecture Notes Game Theory

Figure 2: Independence of irrelevant alternatives

Figure 3: Symmetry

Figure 4: An example to illustrate Nash axioms 4.1 Proof for Essential Bargaining

Cournot duopoly

The result of choice of the player (A) depends on the choice of the other (B) “player”, his own expectation about the payoff, as well as his expectations about the choice of the player B (best response game)

equilibrium prices will be

$$p_1 = p_2 = P(q_1 + q_2)$$

this implies that firm 1's profit is given by

$$\Pi_1 = q_1(P(q_1 + q_2) - c)$$

the profit of firm 1 is therefore given

$$\Pi_1 = P(q_1 + q_2) \cdot q_1 - C_1(q_1)$$

the best response is to find the value of q_1 that maximizes Π_1 , given q_2 , $i \neq j$

$$\frac{\partial \Pi_1}{\partial q_1} = \frac{\partial P(q_1 + q_2)}{\partial q_1} \cdot q_1 + P(q_1 + q_2) - \frac{\partial C_1(q_1)}{\partial q_1} = 0 \text{ for maximization}$$

the values of q_1 that satisfy this equation are the best responses – NASH EQUILIBRIUM

Why is this important to companies and marketers? Very often, some people are deprived of common goods available to a higher economic class of consumers. Those who are being value deprived, used mud instead of soap; charcoal instead of toothpaste; having only one change of clothes instead of a wardrobe; no recourse to quality or even minimum education;

not getting two square meals a day; having to work in someone's house and being deprived of an alternative future.

Many of these can be converted into opportunities; For example, by selling small bars of soap, sachet shampoo or toothpaste, etc. Or products with fewer features and a lower price point. I will leave the reader to think through these.

Value deprivation is based on the premise that the value of an asset is equivalent to the loss that the owner of an asset would sustain if deprived of that asset. So imagine the deprival value of lost education.

2.6. Control

Control theory refers to the field of applied mathematics that is relevant to the control of certain physical processes and systems. Although control theory has deep connections with classical mathematical domains, such as the calculus of variations and the theory of differential equations, it did not become a field in its own right until the late 1950s and early 1960s. Similarly, it applies to the relations of the negotiations "Control" is related to systems, this applies to "Machinery" and to human behavior.

The output of the system $y(t)$ is fed back through a sensor measurement F to a comparison with the reference value $r(t)$. The controller C then takes the error e (difference) between the reference and the output to change the inputs u to the system under control P . This is shown in the figure. This kind of controller is a closed-loop controller or feedback controller.

This is called a single-input-single-output (SISO) control system; MIMO (i.e., Multi-Input-Multi-Output) systems, with more than one input/output, are common. In such cases, variables are represented through vectors instead of simple scalar values. For some distributed parameter systems the vectors may be infinite-dimensional (typically functions)

If we assume the controller C , the plant P , and the sensor F are linear and time-invariant (i.e., elements of their transfer function $C(s)$, $P(s)$, and $F(s)$ do not depend on time), the systems above can be analysed using the Laplace transform on the variables. This gives the following relations:

$$Y(s) = P(s)U(s)$$

$$U(s) = C(s)E(s)$$

$$E(s) = R(s) - F(s)Y(s).$$

Solving for $Y(s)$ in terms of $R(s)$ gives,

$$Y(s) = \left(\frac{P(s)C(s)}{1 + P(s)C(s)F(s)} \right) R(s) = H(s)R(s).$$

The expression,

$$H(s) = \frac{P(s)C(s)}{1 + F(s)P(s)C(s)}$$

is referred to as the closed-loop transfer function of the system.

2.7 Disagreement

Disagreement point

The disagreement point $d = (d_1, d_2)$ is the value the players can expect to receive if negotiations break down. This could be some focal equilibrium that both players could expect to play. This point directly affects the bargaining solution, however, so it stands to reason that each player should attempt to choose his disagreement point in order to maximize his bargaining position.

Equilibrium Analysis

Strategies are represented in the Nash demand game by a pair (x, y) x ...and... y are selected from the interval $[d, z]$ is the disagreement outcome and Z is the total amount of good. If:

$x + y$...is...equal...to...or...less...than... z ...the...1st...player...receives... x ...and...the...2nd... y otherwise...both...get... d ...often... $d = 0$

It is known as Nash's variable threat game¹⁵.

Towards this objective, it is often advantageous to increase one's own disagreement payoff while harming the opponent's disagreement payoff (hence the interpretation of the disagreement as a threat). If threats are viewed as actions, then one can construct a separate game wherein each player chooses a threat and receives a payoff according to the outcome of bargaining.

A

¹⁵ Nash, John (1950). "The Bargaining Problem" *Econometrica* 18 (2): 155–162

if

$$(u(x) - u(d)) = 0 \text{ and / or } (v(y) - v(d)) = 0$$

then,

$$\dots\dots\dots (u(x) - u(d))(v(y) - v(d)) = 0$$

that...means,"...there...is...not...agreement...in...the...BARGAIN

if...this...will...happen...then...there...is...no...BARGAIN(maths)

if

$$(u(x) - u(d)) \neq 0 \text{ and / or } (v(y) - v(d)) \neq 0, \text{ then there is the possibility...of...agreement, going...far...from individual...disagreement..POINTS}$$

players...A...and...B...strategies / choices

(each...of...them...with...his / her...own...DISAGREEMENT..POINT... d_1, d_2

Social...behavior: DISAGREEMENT.(or...threat)..POINT..
beyond...individual...disagreement...

$$(u(x) - u(d)) \text{ and } (v(y) - v(d)) \dots \text{players, A, B, try to max } x \text{ and } y$$

$$\max \dots \text{profit} \dots = \max U_A \cap U_B = \max U_A \times U_B \Rightarrow \frac{d}{du} f = 0$$

$$\dots\dots\dots \max (u(x) - u(d))(v(y) - v(d))$$

if $u(x) \ v(y) \ C(z)$ are..the utility functions of A-B-C(community) bar-geners, then $\max_{[f_0]} (u(x) - u(d)) (v(y) - v(d)) (C(z) - C(d))$

must be the overall Social Equilibrium ..or the "Angels'.Moment"

If $u(x) - u(d) = 0$, and/or $v(y) - v(d) = 0$, and/or $C(z) - C(d) = 0$, then the multiplication product will be also ZERO..
Otherwise, there will not be agreement or SOCIAL BARGAIN

At any case, the (A-B) BARGAINERS and..the Community -as the 3rd player in the BARGAIN in the form of LAW, or even more of the "contract social" (J.J. Rousseau, 1752) - must "push" their own "DISAGREEMENT POINTS as far as possible - beyond INDIVIDUAL EXPECTATIONS so to MAXimise their own profits and all of them to MAX the social profit
If this will happen, then a new situation will be resulted even in dt period: the Angels" Moment

2.8. Control-Disagreement

From a sample of 30 CEO Managers, we found that they disagreed in one week, due to their control in different sectors as following

Generally,

Table 1

nr	Cause- ACTIVITIES	control	Disagreements per week
1	Housing	14	215
2	Social Behavior	16	325
3	Political activity	12	185
4	Family activity	15	332
5	Real estate	18	406
6	Car market	22	522
7	Religious	19	412
8	ECONOMY	25	614
9	supermarket	23	544
10	Daily activity	18	421
11	Cultural activity	22	445
12	nationality	17	408
AV		18,5	402
	-	average	Sum-up

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

Sample correlation coefficient:

$$r_{xy} = \frac{S_{xy}}{S_x S_y}$$

$S_{(x)}$ and

$S(y)$..are..the..sample..stasandard..deviations..and.. $S_{(xy)}$...is..t he.. sample..COVARIANCE

$$\frac{5,325}{\sqrt{177.0 \times 174,757}} = \frac{5,325}{\sqrt{30931989}} = \frac{5,325}{5,561.65} = 0.9575$$

From the above resulted in a very strong correlation between control and disagreement

3. The Concept

The concept.

the win-win-win papakonstantinidis model

3

1. Considered at the organizational level, CSR is generally understood as private firm policy. As such, it needs to be aligned with and integrated into a business model to be successful.
2. a firm's implementation of CSR goes beyond compliance with regulatory requirements and engages in "actions that appear to further some social good, beyond the interests of the firm (Mc Williams, Abigail; Siegel, Donald 2001) and that which is required by law"
3. From this point of view, the importance of my presentation is focused on the "Ethical side" of business, which is the "cutting edge" of modern capitalism
4. This awareness generates value, especially for the consumer, in a "more social bargain" between A-B and the Community (according to the suggested model: the tripple corner-stones customer-business-society which is main Foundation's objective)
5. CSR pre-supposes ethical behavior: but what is ethical behavior and how is this integrated into a bargain
6. Starting from Ramzi Souleiman (2013)¹⁶, we propose CSR work in the cutting edge between market(NE) and ethical economics(Economic Harmony equilibrium), so-called the "equi-harmony", signed by (hlp=1.888) the end of the sensitization process¹⁷

As CSR pre-supposes Ethical Behavior, each of the 2-pole bargainers, in any bargain between 2, (A-B) has to 3-pole thinking :

- ✓ "What's the best for me(A)"
- ✓ What's the best for the other bargainer (B)

- ✓ What's the best for all the other people, who don't participate in this bargain(The "C" factor)
- ❖ We must imagine that any reactive decision, even the smaller one, constitutes an autonomous "system" that is highly sensitive to initial conditions¹⁸.
- ❖ The behavior of dynamical systems that are highly sensitive to initial conditions are examined in the frame of Chaos theory
- ❖ We suggest that "conditions" in a quite different field could result as an impact of any reactive behavior in any bargain, or any instant reflection's strategy
- ❖ The win-win-win Papakonstantinidis model is based on this very small instant reflection, highly sensitive to initial conditions.

A "win-win-win holistic proposal includes the COMMUNITY, or

- ❖ the "C" factor, not only as "a third player", but even more as a "person" with more than one responsibilities:
- Mediator
- Arbitrator
- A trust and justice institution
- LMX [Leader-Member-Exchange] institution
- The Agent in the "Principal-Agent Theory"
- The **intuitive coherence** of "We belong in a community (family, village, town, city, nomos, province, periphery, state, unions of states...global cohesion

This "fantastic person-"C" factor [i.e a family, a neighborhood, a place, an area, a city, a town, a state, AND history, tradition, behavior code, ethic, race...." (something that produces cohesion links) MUST play a 3D responsibilities, concerning as "mediator" of all "cohesion forces"

So a new form, the form of a triple pole reaction is proposed, with the COMMUNITY –as an idea, as a local cohesion perspective (traditions, local ethical code of communication...may substitute the "hard" bi-polar conflict system

EXAMPLE (2018-2019)

Bush and Putin have decided to make a drill for oil pumping in the North Pole at their common borders

This work would benefit a lot of both sides (US-Russia) employment of additional labor, additional income, etc. However, this would be very burdensome for the natural environment. All others except 2- (Organizations, etc.) [the

¹⁶ Ramzi Suleiman(2018) On Gamification and fair men: explaining fairness in non-cooperative bargaining games- Royal Society Open Science 2018

¹⁷ Papakonstantinidis L. A (2004) "Sensitization and Involvement the Community: A Rural Tourism Application of the win-win-win Model" Review of Economic Sciences -TEIEP, issue 6

¹⁸ the Lyapunov exponent measures the sensitivity to initial conditions. Given two starting trajectories in the phase space that are infinitesimally close, with initial separation $\delta|Z_0|$ the two trajectories end up diverging at a rate given by $\delta Z(t) \approx e^{\lambda t} \delta|Z_0|$ where t is the time and λ is the Lyapunov exponent.

third win according to the model] started to cancel the deal and eventually succeeded

SPECIAL CASE: Legislation

Maybe legislation is imposed from up to downward could ensure the existence of the third win

On this an objection could be raised: The point is the intuitive coherence, not the laws –see at the example laws are good if citizens are good.

Laws are imposed from top to bottom.

It is an enforcement.

So see what happens:

A-case: Britain does not have a single written constitution

The rules that define the balance of power between government and government in Britain are not concentrated listed in the text.

The British constitution is made up of several documents, including the Magna Carta (The Great Charter of 1215), the Petition of Rights (1628), the Statute of the Rights (1689), the Settlement Law (1701), the Parliamentary Laws (1911 and 1949) and the People's Representation Act (1969).

But in the UK the not written constitution which is not written down has been –through centuries- respectable respected by the citizens and population and politicians

B-case in my country: We have detailed Laws that cover guide almost all the every aspect fields of human behavior, including human activities, but these laws are not respectable, by the majority of the Greek population

By the “sensitization’s approach”, a number of parallel steps could be achieved, namely,

1. Steps on the ladder (ARNSTEIN, 1967)
2. CSR: Objectives and Actions: STEPS BACKWARD
3. Types of Knowledge-Behavior resulted from the knowledge synthesis

Steps on the ladder (ARNSTEIN, 1967)

The “sensitization and involvement process, toward the wellbeing, through the interaction in the bargain (any bargain, between 2)

Table: CSR: Objectives and Actions

	objectives	impact	Benefits
BACK-STEPS			
1 •	partnership	business self-regulation	Social cohesion
2 ↑	involvement	voluntary decisions individual organizations	The company should be held socially accountable
3	participation	philanthropy	Shared value
4	sensitization	Benefactors- Evergetes	COMMUNITY
5 ↑	information	Team psychology	Links between business –society

CSR: Objectives and Actions: STEPS BACKWARD

The table introduces a backward process, in orders to define each of the steps in the Arnstein Ladder, in a triple approach: by objective, the impact, and the benefits coming from the analysis

Type of Knowledge-1	Type of Knowledge-2	Synthesis	Resulted Behavior
tacit	tacit	Sympathetic	Socialization
tacit	codified	Conceptual	Externalization
codified	tacit	Procedural	Internalization
codified	codified	Systemic	Networking
sympathetic	systemic	Conceptual	Sensitization
systemic	systemic	Procedural	Strategic

Types of Knowledge-Behavior resulted from the knowledge synthesis. In this table, a combination of simple forms of knowledge is given, thus new forms of behavior could result

One step more,

We examine if “wealth” “loan”, “work” and “interest rate” could co-exist in a sensitized society¹⁹

4. Math Approaches

- Hypothesis: H_o perfect cooperation:

$$H_o = m.ax[(u_1 - t_1)(\bar{u}_1 - t_1)(\bar{u}_2 - t_2)]$$

$$= m.ax[(u_1 - t_1)(u_2 - t_2)], u \in P...or$$

$$\forall i, x_i \in S_i : f_i(x_i^*, \dots, x_{-i}^*) \geq f_i(x_i, \dots, x_{-i}^*)$$

- The simple “win-win” math form is: (S, f)
 $S = S_1 \times S_2 \times \dots \times S_n$
- $f = (f_1(x), f_2(x), \dots, f_n(x))$ $x \in S$. except for player i . When each player $i \in \{1, \dots, n\}$
- $x = (x_1, x_2, \dots, x_n)$ then, player i obtain payoff $f_i(x) \in S$ is a Nash equilibrium (NE) if no unilateral deviation in strategy by any single player is profitable for that player, that is $\forall_i, x_i \in S_i, x_i \neq x_i^*$:

$$f_i(x_i^*, x_{-i}^*) \geq f_i(x_i, x_{-i}^*)$$

to

$$\lim_{i \rightarrow \infty} U_{1i} \times (\&) U_{2i} = MAX. U_{1i} \times U_{2i}$$

& ...strategies/ decisions, ...U..Utility..Function, ...i = player

4.1 Towards a new equilibrium?

The main point of the presentation is to find a new equilibrium, resulting from a new bargain, the suggested “social bargain”

On the other hand, “Corporate Social Responsibility” (CSR), working within the frame of the “social bargain” could be considered by the “win-win-win Papakonstantinidis model”, for Customer, Business and Society (CBS)

Two alternative approaches are suggested by this presentation:

- Social Profit Maximization (SPM)
- Sequential Bargaining Games (SBG)

1st approach: the bargaining problem- the *hlp* suggested Equilibrium

BARGAINING PROBLEM: THE “ANGELS’ MOMENT “

$$\forall i, x_i \in S_i : f_i(x_i^*, \dots, x_{-i}^*) \geq f_i(x_i, \dots, x_{-i}^*) \geq f_i(x_i, \dots, x_{-i-i})$$

Table 2: The win-win-win Papakonstantinidis model: An example

Proposal: win-win-win/ utility max							
Share A (%)	Share B (%)	Utility A	Utility B	Utility AXB	Share C (%)	Utility C	Utility AXBXC
90	4	1	71	71	6	1	71
80	13	2	70	140	7	2	280
70	22	5	68	340	8	3	1020
60	31	10	64	640	9	4	2560
50	40	16	60	960	10	5	4800 max
41	50	23	52	1196	9	4	4784
32	60	31	40	1240	8	3	3720
23	70	40	24	960	7	2	1920
14	80	50	12	600	6	1	600

Pareto Efficiency

¹⁹ Thomas Kronberger-Papakonstantinidis LA (2019) Applying the Papakonstantinidis 3-ple-win-model on the social welfare system of the labor markets in Greece and Germany, international journal of research in c & m, 2019/03

Pareto efficiency, also known as "Pareto optimality," is an economic state where resources are allocated in the most efficient manner, and it is obtained when a distribution strategy exists where one party's situation cannot be improved without making another party's situation worse. Pareto efficiency does not imply equality or fairness.

PARETO...EFFICIENCY

MAX...Utility...Function: ...MAX .. $U(x_1, \dots, x_2, \dots, x_n)$

$$\sum p_i x_i \leq M, \dots \forall x_i \geq 0, \dots \forall x_i \in \{1, \dots, 2, \dots, n\}$$

$$p = \text{price}, \dots x_i = \text{quantities}, \dots \sum p x_i = \text{sum of all}, \dots p x_i$$

$M = \text{FRONTIER} \dots \text{MAX} \dots \text{sources for allocation}$

$$U_i = u_i \times p_i$$

$$U_A = u_A \times p_A$$

$$U_B = u_B \times p_B$$

$$U_C = u_C \times p_C$$

$U = \text{pleasant experience according to a strictly personal positive list}$

$u = \text{individual utility (not measuring)}$

$p = \text{probabilities, these pleasant experiences occur in the A.B.C. individual}$

From this point of view, "payoffs" are the incentives, for which 2 bargainers start negotiations. The final [agreement or not agreement] is the outcome

In this proposed method, we recognize that (A-B and the COMMUNITY) negotiators pushed by expected payoffs

$$U_A, U_B, U_C$$

when

$$U_A = x$$

$$U_B = y$$

$$U_C = (100 - x - y)$$

$$U_A \cap U_B \cap U_C = U_A \times U_B \times U_C = \text{MAX} \Leftrightarrow (U_A \times U_B \times U_C)' = 0$$

$$xy(100 - xy)^n = \text{MAX} \Leftrightarrow [xy(100 - x - y)^n]' = 0$$

generally,

$$(f(x) * g(x))' = f'(x) * g(x) + f(x) * g'(x)$$

The win-win-win Papakonstantinidis model: the intersection cycles

But,

$$U_A \cap U_B \cap U_C = U_A * U_B * U_C = \text{max}$$

$$(U_A * U_B * U_C)' = 0$$

$$u_i = f_i(s)$$

$$xy(100 - x - y)^n = \text{max} \rightarrow [xy(100 - x - y)^n]' = 0$$

$$[xy(100 - x - y)^n]' = x'y(100 - x - y)^n + xy'(100 - x - y)^n = xy[(100 - x - y)^n]' = 0$$

$$xy(100 - x - y)^n]' = y(100 - x - y)^n + x(100 - x - y)^n + nxy(100 - x - y)^{n-1} = 0$$

$$(f(x) * g(x))' = f'(x) * g(x) + f(x) * g'(x)$$

$$[xy(100 - x - y)^n]' =$$

$$y(100 - x - y)^{n-1}(100 - x - y) + x(100 - x - y)^{n-1}(100 - x - y) + nxy(100 - x - y)^{n-1} = 0$$

$$\text{If must: } \dots xy(100 - x - y)^n = \text{max} \rightarrow \lim_{x \rightarrow 0} [xy(100 - x - y)^n] = 0$$

$$\sup_{x \rightarrow 0} \text{that } (100 - x - y) \neq 0$$

$$y(100 - x - y) + x(100 - x - y) + nxy * 1 = 0$$

$$(x + y)(100 - x - y) + nxy = 0 \Rightarrow \left(\frac{x+y}{xy}\right)(100 - x - y) = (-1)n \dots \text{by putting } \frac{x+y}{xy} = \lambda > 0$$

$$\lambda(100 - x - y) = (-1)n \Rightarrow (100 - x - y) = \frac{-n}{\lambda} = (-n) \frac{1}{\lambda}$$

but, ..., $(100 - x - y) = \% \text{Community share of a budget, } b = 1 \dots \text{EXPECTED payoff from } b = 1$

$\% \text{Community share} = (-n) \frac{1}{\lambda} (b) \dots \text{the } (-n) \dots \text{denotes the reduction}$

result which comes from the Community "reaction" in any BARGAIN (by its 3rd role, is

as an Agent of the CITIZEN-PRINCIPAL relation, Arbitrator, and as the

Independent 3rd party) to the total budget. "b" of the BARGAIN

then, the i^{th} player's best mixed strategy (probability = a lottery over

a trinomial distribution) is the best strategies for himself, as well as the best STRATEGIES

for the other players, as well as the best strategy

for the Community (the common welfare)

notes:

A, B, C...do...not...cooperate...forward

A, B, C...must...collaborate...in...and...during...the...bargain... (ins tant. reflection.winning...strategies)

"C"...expresses...not...only...the...rest... (no...bargain...participants)..., but...also...the...total...community...the...word...cultural...heritage...world...cultivation...the... "human...being"... "Homo...Sapiens"

From...this...point...of...view...Community...participation...in...any...bargain...between...TWO(2)...is...necessary

Also...COMMUNITY...the... "c"...factor...MUST...express...the... "Community...Fear"...from...the...bargain...between...A, B

For...this... "Community...participation"...is...captured...as... $(100 - x - y)$... where...n...is...the...fear...factor... (nonlinear)... while...

the...A, B...utility...functions...must...be...linear

Figure (win-loose), (win-win) AND the proposed win-win-win Papakonstantinidis model

Starting from Ramzi Souleiman (2013) findings, on the “economic-harmony” equilibrium, this study goes one step further, into a synthesis between market(NE) and ethical economics (Economic Harmony equilibrium), the so-called “equi-harmony” –the end of the sensitization process²⁰ A common finding of experiments on sequential bargaining with shrinking pies is that the opening demands of first players fall somewhere between the equality and the Sub-game Perfect Equilibrium-SPE prediction. As a consequence, several experimental studies attempted to probe the significance of fairness considerations in an **ultimatum and sequential bargaining games**. In the ultimatum game, the **subgame perfect equilibrium (SPE)** prescribes that the proposer should

demand the entire pie, minus an infinitesimally small epsilon ($\epsilon - \text{epsilon}$) to be offered to the responder- The **ultimatum bargaining²¹ is based on offer-rejection” concept Subgame Perfect Equilibrium (SPE)** ²²Experiments on bargaining games have repeatedly shown that subjects fail to use backward induction.

Prof. Ramzi Suleiman (2018) proposed an alternative model, termed 'economic harmony', in which we modified individual's utility by defining it as a function of the ratio between the actual and aspired pay-offs. He also abandoned the notion of equilibrium, in favor of a new notion of 'harmony', defined as the intersection of strategies, at which all players are equally satisfied. He showed that the proposed model yields excellent predictions of offers in the ultimatum game, and requests in the sequential common pool resource dilemma game. Strikingly, the predicted demand in the ultimatum game is equal to the famous Golden Ratio (approx. 0.62 of the entire pie).

1. sequential bargaining games i.e chess

In game theory, a sequential game is a game where one player chooses their action before the others choose theirs. Importantly, the later players must have some information on the first player's choice, otherwise, the difference in time would have no strategic effect. Sequential games are hence governed by the time axis and represented in the form of decision trees. Unlike sequential games, simultaneous games do not have a time axis as players choose their moves without being sure of the other's, and are usually represented in the form of payoff matrices. Extensive form representations are usually used for sequential games since they explicitly illustrate the sequential aspects of a game. Combinatorial games are usually sequential games²³ The ultimatum game a simple representation of alternating offers²⁴

<ul style="list-style-type: none"> • Player 1 offers $0 \leq x \leq M$ to Player 2 • Player 2 Accepts $(\pi_1, \pi_2) = (M-x, x)$ or rejects 	<ul style="list-style-type: none"> • Repeat according to number of rounds of the game Ultimatum game
--	--

22

- Osborne, M. J. (2004). An Introduction to Game Theory. Oxford University Press.
- Joel, Watson,. Strategy : an introduction to game theory (Third ed.). New York
- Takako,, Fujiwara-Greve,. Non-cooperative game theory. Tokyo

23

- The Path to Equilibrium in Sequential and Simultaneous Games (Brocas, Carrillo, Sachdeva; 2016).
- Claude Shannon (1950). "Programming a Computer for Playing Chess" (PDF). Philosophical Magazine. 41 (314).

24

- W. Güth, R. Schmittberger and B. Schwarze: "An experimental analysis of ultimatum bargaining", JEBO 1982.

20 Ramzi Suleiman(2018) On Gamification and fair men: explaining fairness in non-cooperative bargaining games- Royal Society Open Science 2018

21 Güth, W., Schmittberger, R., & Schwarze, B. (1982) An Experimental Analysis of **Ultimatum Bargaining**. Journal of Economic Behavior & Organization, 3, 367-388. Sanfey, Alan; Rilling; Aronson; Nystrom; Cohen (13 June 2003). "The Neural Basis of Economic Decision-Making in the Ultimatum Game" Science 300 (5626): 1755-1758 [... One player, the proposer, is endowed with a sum of money. The proposer is tasked with splitting it with another player, the responder. Once the proposer communicates their decision, the responder may accept it or reject it. If the responder accepts, the money is split per the proposal; if the responder rejects, both players receive nothing. Both players know *in advance* the consequences of the responder accepting or rejecting the offer.

<ul style="list-style-type: none"> • If Player 2 rejects the offer, the pie shrinks to $M' < M$ • Player 2 makes offer $0 \leq x' \leq M'$ to Player 1 	<ul style="list-style-type: none"> • Alternating offer bargaining where pie vanishes after 1 round: $M' = 0$ • The offer x is a take it or leave it offer (an ultimatum)-
---	---

$M=10$

- In parallel, theoretical attempts were made in order to incorporate pay-off-interdependent preferences in the game-theoretic model. Such models propose that players' preferences depend not only on the individual monetary pay-off but also on the pay-offs of others. Ochs & Roth and Bolton suggested that the players' utilities increase in one's own pay-off, and with a decrease in the ratio between the pay-offs of the opponent and oneself. The theory of equity, reciprocity and competition (or ERC) posits that, along with pecuniary gain, people are motivated by the ratio of their own pay-offs to the pay-off of others, while inequality aversion (IA) theory assumes that, in addition to the motivation for maximizing own pay-offs, individuals are motivated to reduce the difference in pay-offs between themselves and others,
- Although a lot of general conclusions have been offered at this point, you can't avoid the feeling that a large universe has been sampled at only a few, unsystematically chosen points. So an obvious next step is to systematically vary some of the variables that have been looked at in isolation—discount factors (and hence perfect equilibrium predictions), and length of the game. This is straightforward to do. The only technical experimental design issue was how to vary the discount factors within members of a bargaining pair. The previous experiments had all used the shrinking pie method to induce the same discount factor for both bargainers.

Dictator and Ultimatum Game: To separate motivations of proposers and responders: Game that is as similar to the ultimatum game as possible, but where the responder cannot express his preferences in any way. Hence eliminating motivations of responders

Ultimatum Game: Proposer proposes a division of M (10), the responder accepts and division is implemented or rejects, and M is destroyed, both agents get 0. **The Dictator Game:** Proposer proposes a division of M (10), the responder has to accept

The *hlp* suggested Equilibrium

2nd approach: the 3 sequences, converging in:

$$\phi \leq hlp < e$$

The “win-win-win concept”: Sensitization Process: terms of a continuous sequence

$$u_n \dots \text{with} \dots \lim_{n \rightarrow \infty} u_n = h_{lp}^* = \text{community win} - \text{The end of sensitization process}$$

STATEMENT (Papakonstantinidis, 2018)

The **sensitization process**-which is the core of this Work -may be formulated by the three (3) world constants, as limits of

$$u_n, v_n, z_n :$$

$$\phi, e, \pi$$

Table: ϕ, π, e numerical values

$$\phi = \frac{1+\sqrt{5}}{2} = 1,618..$$

$$\pi = \frac{22}{7} = 3.14159...$$

$$e = \left(1 + \frac{1}{n}\right)^n = 2,7182818..$$

$$\varphi = 1,61803398874989484820.....$$

$$\pi = 3,14159\ 26535\ 89793\ 23846\ 26433\ 83279\ 50288\ 41971\ 69399\ 37510.....$$

$$e = 2,7182818284590452353602874713527\$$

In the 2nd phase, we suppose that ϕ, e, π form a NEW

sequence converging in h_{lp}^*

$W_n, \dots$ so that $\lim_{n \rightarrow \infty} W_n = h_{lp}^* = 1,888..$ such that²⁵:

$$\ln 2 < \phi = 1,618.. \leq h_{lp} = 1,888.. \leq e = 2,7182818..$$

The number φ

$$\frac{a+b}{a} = \frac{a}{b} \stackrel{\text{def}}{=} \varphi,$$

$$\varphi = \frac{1+\sqrt{5}}{2} = 1.61803\ 39887...$$

$$\varphi = \frac{1-\sqrt{5}}{2} = -0.6180\ 339887...$$

$$x_n = \frac{F_n}{F_n + F_{n-1}} = \frac{1}{1 + x_{n-1}}$$

$$\lim_{n \rightarrow \infty} \frac{f_n}{f_{n+1}} = \frac{1}{\phi} \dots \phi = \frac{f_{n+1}}{f_n}, \text{convergent to } 1,618.....$$

$$\phi = \frac{1+\sqrt{5}}{2} = 1,6180339888.....$$

According to Ramzi Suleiman(2017) [while a harmony point is not an equilibrium in the formal definition referred to above, it constitutes a critically stable state. The first player can increase the utility by keeping a larger portion of the total amount than the one prescribed by the harmony point, but this will result in decreasing the satisfaction level of the second player, who might reject the unfair offer]. **Instead of assigning the monetary pay-off, x, as the argument for the utility function, we assign as an argument the variable x/a, where a is the individual's aspired pay-off in the interaction.** As such, the proposed utility function is a measure of the player's level of satisfaction, Ramzi Suleiman(2017) showed that the proposed theory yields excellent predictions of the offers observed in **ultimatum bargaining** and the requests in the sequential common pool resource (CPR) dilemma game. His solution also predicts several unexplained findings, Strikingly, he found that the predicted opening demand in the alternating offers game is also equal to the Golden Ratio.

From all these notions, the two approaches- **Souleiman-Papakonstantinidis**²⁷ converge in the note that Bargaining Equilibrium (the Market Side) is no longer definitely accepted. Maybe "Harmony" (Ramzi Suleiman 2017) could be considered as an important factor in a bargain. Our concept includes both (the Nash Equilibrium and the Suleiman "Harmony", under a NEW word "EQUI-HARMONY"=

$$h_{lp} = 1.888..$$

GRAPH 3. The PHI (φ) NUMBER-GOLDEN RATIO: Graphs and Images

them to converge on 1,618...= φ phi, from FIDIAS

²⁵ We use $\ln 2$ and e to "describe" the W_n as a sequence bounded up and down, by $\ln 2$ and the e sequences

²⁷ The 888 triangular approach: The "win-win-win papakonstantinidis model (2002/8/14) VISBY, SW summer-school

8

888

88888

88888888

8888888888888888

888888888888888888888888

88888888888888888888888888888888

88888888

Golden ratio- Papakonstantinidis la

Analysis: The 3 main Math Constants $\varphi - e - \pi$

In this section, the math constants combination is examined, in relation with their impact in building a new bargaining

equilibrium: The equi-harmony point hlp in the

intersection of

the customer-business-society cycles, responsible to the math

constants 1-1, $\varphi - e - \pi$

the win-win-win papakonstantinidis
model

THE MATH CONSTANTS

$$e = 2.718281828$$

$$\phi = 1.618033988$$

$$\pi = 3.141592653$$

φ, e, π relationship's manipulation

$$\binom{n}{k} = \frac{n!}{k!(n-k)!} = \frac{(n(n-1).....(n-k-1))}{k(k-1...1)} = \frac{3*2*1}{2*1(3-1)(3-2)} = 3$$

ways for ϕ, e, π combination

Taking into account the three mathematical constants (π, ϕ, e), as the limits of $(u_n, \dots, v_n, \dots, z_n)$ i.e. $\lim_{n \rightarrow \infty} (u_n, \dots, v_n, \dots, z_n)$, then it

is easy to manipulate their combination. One of these math

combinations seems to be $\phi: \frac{e}{\pi}$

$$\frac{e}{\pi} = \frac{2,718}{3,14} = \frac{2,71}{3,14} = 0,8569.. = \omega$$

$$\frac{\phi}{\omega} = \frac{1,618..}{0,8569} = 1,888...$$

Even,

$$\phi : \frac{e}{\pi} = \left(\frac{\frac{\phi}{e}}{\frac{\pi}{\pi}} \right) = \left(\frac{\frac{\phi}{1}}{\frac{e}{\pi}} \right) = \frac{\phi\pi}{e} = \left(\frac{1,618*3,14159}{2,7182818} \right) = \frac{5,083092}{2,7182818} \approx 1,888..$$

$$\lim_{n \rightarrow \infty} F_n = \phi \leq hlp = 1,888... \prec \lim \left(1 + \frac{1}{n}\right)^n = e, \dots$$

The number e 28

The number e is a mathematical constant that is the base of the natural logarithm: the unique number whose natural logarithm is equal to one. It is approximately equal to 2.71828 and is the limit of $(1 + 1/n)^n$ as n approaches infinity, an

²⁸ EULER:

- Euler, Leonhard (2015). Elements of Algebra. Create Space Inc., a division of Amazon.com.

- Methodus inveniendi lineas curvas maximi minime proprietate gaudentes, sive solutio problematis isoperimetrici latissimo sensu accepti (1744). The Latin title translates as a method for finding curved lines enjoying properties of

expression that arises in the study of compound interest. It can also be calculated as the sum of the infinite series[The number e ³⁰ constant or Euler's number is a mathematical constant. The e constant is a real and irrational number

$$e = \lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^n = 2.7182818\ldots$$

$$e = \sum_{n \rightarrow \infty} \frac{1}{n!} = 1 + \frac{1}{1 \times 1} + \frac{1}{1 \times 2} + \frac{1}{1 \times 2 \times 3} + \ldots = 2.718281828459\ldots$$

We, now, suppose that, MEASURING “WELFARE”³¹, towards its “win-win-win” ideal situation, as the deviation (%) from “**equi-harmony**”³² hlp which is given from:

$$\ln 2 \leq \phi \leq hlp \leq e$$

the...number.... π

The number π is a mathematical constant. Originally defined as the ratio of a circle's circumference to its diameter, it now has various equivalent definitions and appears in many formulas in all areas of mathematics and physics. It is approximately equal to 3.14159. A diagram of a circle, with the width labeled as diameter, and the perimeter labeled as the circumference $\pi = \frac{C}{d}$

The π is commonly defined as the ratio of a circle's circumference C to its diameter d :

$$\pi = \frac{22}{7} = 3,14\ldots$$

Table 3: The intermediate Sequence: The hlp eui-harmony point-1.888.
The “3-win Lemma”³³

if...for.the.sequences $u_n, v_n, z_n, \dots, n = 1, 2, \dots$

we.have..that $u_n < v_n < z_n$...for.all n ..and..that.they.are.all.converging..i.e

we.have..that $a = \lim_{n \rightarrow \infty} u_n, \dots, b = \lim_{n \rightarrow \infty} v_n, \dots$ and $c = \lim_{n \rightarrow \infty} z_n$..then..(conclusion)

we..will..have.. $\lim_{n \rightarrow \infty} u_n \leq \lim_{n \rightarrow \infty} v_n \leq \lim_{n \rightarrow \infty} z_n, \dots$ i.e., $a \leq b \leq c$

we..start..with

If ..c..is..the.. $\lim_{n \rightarrow \infty}$..of $z_n = \left(1 + \frac{1}{n} + \frac{1}{n+1} + \frac{1}{n+2} + \dots + \frac{1}{2n}\right) = \left(1 + \frac{1}{n}\right)^n \leq e \approx 2,7182816\ldots$

Ifa...is..the.. $\lim_{n \rightarrow 0}$..of $u_n = \left(\frac{1}{n} + \frac{1}{n+1} + \dots + \frac{1}{2n-1}\right) \geq \ln 2$

then,

..... $\ln 2 \leq u_n, v_n, z_n \leq e$

We will now show that the sequence³⁴

$$u_n = \frac{1}{n+1} + \frac{1}{n+2} + \dots + \frac{1}{2n}, \dots, n = 1, 2, \dots$$

converges and we have:

$$\lim_{n \rightarrow \infty} \left(\frac{1}{n+1} + \frac{1}{n+2} + \dots + \frac{1}{2n}\right) = \log_e 2 = \ln 2$$

MEASUREMENT: DEVIATION % from the suggested Equilibrium

SOCIAL WELFARE could be measured by the win-win-win Papakonstantinidis model:

hlp

maximum or minimum, or solution of isoperimetric problems in the broadest accepted sense.[69]

- Introductio in analysin infinitorum (1748). English translation Introduction to Analysis of the Infinite by John Blanton (Book I, ISBN 0387968245, Springer-Verlag 1988; Book II, ISBN 0387971327, Springer-Verlag 1989).
- Two influential textbooks on calculus: Institutiones calculi differentialis (1755) and Institutionum calculi integralis (1768–1770).
- Letters to a German Princess (1768–1772).
- A definitive collection of Euler's works, entitled Opera Omnia, has been published since 1911 by the Euler Commission of the Swiss Academy of Sciences. A complete chronological list of Euler's works is available at the following page: The Eneström Index (PDF).

³⁰ $f(2) = \ln(2) = \log_e 2 = x = 0,6931471805\ldots$
ensuring:

$$e = 2,718281828^{0,6931471805\ldots} = 2,00046\ldots \approx 2,000$$

³¹ As a deviation from the h_{lp}^* equilibrium

³² “EQUI-HARMONY” : Equilibrium (the market side) and harmony (the socio-ethical side) of any bargain

³³ starting from: Lambros Iossif-Leonidas A. Papakonstantinidis (1990) "Observation on a Limit" Mathematical Review, issue 37,

³⁴ The same for the other two, v_n and z_n

At any case there is a constant C , which has been measured by the suggested model to be the limit of the sensitization process³⁵ for each bargainer, the community included:

$$\lim_{n \rightarrow \infty} u_n = 1 + \frac{1}{n} + \frac{1}{n+1} + \frac{1}{n+2} + \dots = \sum_{n=0}^{\infty} \frac{1}{n!} = e = 2,718281828459045 \dots \text{with } \lim_{n \rightarrow \infty} W_n = hlp$$

•

$$\phi : \frac{e}{\pi} = \left(\frac{\phi}{e} \right) = \left(\frac{\frac{\phi}{1}}{\frac{e}{\pi}} \right) = \frac{\phi\pi}{e} = \left(\frac{1,618 * 3,14159}{2,7182818} \right) = \frac{5,083092}{2,7182818} \approx 1,888..$$

$$\lim_{n \rightarrow \infty} F_n = \phi \leq hlp = 1,888... < \lim \left(1 + \frac{1}{n} \right)^n = e, \dots$$

The win-win-win Papakonstantinidis model is, thus, the limit-up of a continuous sensitization procedure, at any (A-B) bargainers AND Community "C" symbolized by the three sequences', i.e

$$u_n \dots \text{for the BARGAINER} \dots A$$

$$v_n \dots \text{for the BARGAINER} \dots B$$

$$z_n \dots \text{for the COMMUNITY, AS THE THIRD BARGAINER}$$

Indeed,

You can imagine the successive steps towards sensitization as a series of sequence terms that converges to a limit

$$\begin{aligned} H_o &= \max[(u_1 - t_1)(\bar{u}_1 - t_1)(\bar{u}_2 - t_2)] \\ &= \max[(u_1 - t_1)(u_2 - t_2)], \dots u \in P \dots \text{or} \\ \forall i, \dots x_i \in S_i \therefore f_i(x_i^*, \dots x_{-i}^*) &\geq f_i(x_i, \dots x_{-i}) \\ [(U_A \times U_B \times U_C)]^K &= \text{MAX} \\ \Rightarrow \text{then } (U_A \times U_B \times U_C)' &= 0 \\ 0 \leq k &\leq \frac{1}{3} \end{aligned}$$

The boundaries of these sequences, since they represent "sensitization levels", also form a new sequence W_n and let

a a real number:

$$|W_n - a| < \varepsilon$$

and

$$\varepsilon > 0$$

W_n "sensitization sequence" converges at some point to the ideal limit -up (the Angels' society) then all three limits of the u_n, v_n, z_n sequences a, b and the community, C, respectively forming a new-unique sequence, which converges in a new hlp

Welfare can be measured, as the deviation from suggested Equilibrium

Tending toward an ideal (angels) situation, i.e the limit of the sensitization process, the win-win-win Papakonstantinidis model is the limit-up of a continuous sensitization procedure, at any (A-B) bargainers symbolized by the three sequences', i.e

$$\lim_{n \rightarrow \infty} u_n \leq \lim_{n \rightarrow \infty} v_n \leq \lim_{n \leftarrow \infty} z_n$$

In their limit, we have:

$$\lim_{n \rightarrow \infty} u_n = \lim_{n \rightarrow \infty} v_n = \lim_{n \rightarrow \infty} z_n = \lim_{n \rightarrow \infty} W_n = 1,888..$$

Indeed,

You can imagine the successive steps towards sensitization as a series of sequence terms that converges to a limit

The boundaries of these sequences, since they represent "sensitization levels", also form a new "Win" sequence

We prove that this new sequence consists of their limits

as "sensitization sequences" converges to the ideal limit -up (the perfect society, or the society of angels) then all three limits of the u_n, v_n, z_n sequences a, b and the community, C,

³⁵ The W_n , converging in $h_p^* \approx 1,888$

respectively forming a new-unique sequence, which converges in a new L limit

DISCUSSION: Research Questions (RQ)

1. Value destruction assumes that value was or is available to you.
What happens when the value is not available to you because of circumstances or because you have no control?
2. Is the win-win-win Papakonstantinidis model a useful tool for measuring the Value destruction
3. Could we measuring the control impact on a disagreement?
4. How disagreement influences the creating of values' factor?

References

- Mill John Stuart (1806) Principles of Political Economy with some of their Applications to Social Philosophy William J. Ascley ed -first Pub Date, 1848) Also, Mill John Stuart The Collected Works of John Stuart Mill, edited by John M. Robson (Toronto: University of Toronto Press, London: Routledge and Kegan Paul, 1963–91), in 33 volumes, and are given by volume and page. B
- Mill John Stuart 1806 – 1873) treatise Principles of Political Economy (1848) Hamburg: Verlag von Otto Meissner. Retrieved 15 June 2016 – via e-rara.ch (ETH-Bibliothek Zürich).; Marx, Karl (1885)
- Mill John Stuart, Alan M. Dershowitz RETR (2008) On Liberty and Utilitarianism Paperback, Bantam Classic Reissue, Published May 1st, 2008 by Bantam Classics B
- Nasar, S.-Kuhun 1998. A Beautiful Mind. New York: Simon and Schuster.
- Nash John (1951) "Non cooperative Game Theory (annals of Mathematics, 1951 Vol.54, No.2 (Sep., 1951), pp. 286-295 [Crossref](#)
- Nash, J.F., Jr. 1950. Equilibrium points in n -person n -person games. Proceedings of the the National Academy Academy of Sciences, USA 36, 48–9. [Crossref](#)
- Nash, J.F., Jr. 1953. Two-person cooperative games Econometrica 21, 128–40. [Crossref](#)
- Nash, J.F., Jr. 1995. Autobiography Les Prix Nobel The Nobel Prizes 1994, ed. T. Frangsmyr Stockholm: Nobel Foundation. Online
- Nash, John (1950) "The Bargaining Problem" Econometrica 18 (2): 155–162. [Crossref](#)
- Neumann John von and Oscar Morgenstern (1944)" Theory of Games and Economic Behavior, published in 1944 by Princeton University Press, 2007 RETRIVE) "Theory of Games and Economic Behavior" 60th Anniversary Commemorative Edition (2007) 60th Anniversary Commemorative Edition John von Neumann & Oskar Morgenstern (With an introduction by Harold Kuhn and an afterword by Ariel Rubinstein
- Neumann, J. von 1928. Zur theories der gesellschaftsspiele. Mathematische Annalen 100, 295–320. English translation by S. Bergmann in Contributions to the Theory of 8 Nash, John Forbes (born 1928) Games IV, ed. R.D. Luce and A.W. Tucker Princeton: Princeton University Press, 1959. [Crossref](#)
- Papakonstantinidis LA (2016) Volume II titled "The "win-win-win Papakonstantinidis model" VOLUME II: COLLECTION social choice, social welfare: theoretical background 2016 RESEARCH GATE-Papakonstantinidis LA (1997): the "S.H.I.E.L.D model" (the Sensitive Harmonic Integrated Endogenous Local Development")- Presentation Book of Proceedings "World Conference "Tourismo Verde", Rome, 1997
- Papakonstantinidis L.A(2002-August 14) "The win-win-win model" Euracademy Guide The Visby University-Gotland-SW
- Papakonstantinidis LA (2013) "Involving Communities In Rural Tourism: A "Win-Win-Win Papakonstantinidis Model" Methodological Approach Case Studies: Women Rural Tourism Cooperatives: A) Gargaliani, Peloponnesus Area (South-West Gr) B) Wert (Women Entrepreneurs In Rural Tourism) EU Program : Win – Win –Win Papakonstantinidis Model" As A Recognized (In European- Wert Net-Level) Rural Tourism Methodological Tool" Book Proceedings Pp 80-109 Reports 108 Communities As A Part Of Sustainable Rural Tourism – Success Factor Or Inevitable Burden? Proceedings Of The Community Tourism Conference, 10th – 11th September 2013 Kotka, Finland Merja Lõhdesmõki Ja
- Papakonstantinidis LA (1997): the "S.H.I.E.L.D model" (the Sensitive Harmonic Integrated Endogenous Local Development")- Presentation Book of Proceedings "World Conference "Tourismo Verde", Rome, 1997
- Papakonstantinidis LA (2012) The 'Win-Win-Win Papakonstantinidis Model' as a Bargaining Solution Analysis for Local Government Decision from Territory-Community to 'Behavioral' Community: The Case of Greece
- Papakonstantinidis LA (2013) The Intermediate Community: A Behavioral / Bargaining Approach For Conflict Resolution At The Local Level/ Bayesian Analysis EUROMED World Conference- Proceedings P. 1443

- Papakonstantinidis LA (2016) "The win-win-win papakonstantinidis Papakonstantinidis model" VOLUME II: COLLECTION social choice, social welfare: theoretical background" RESEARCH GATE, 2016/NOV
- Papakonstantinidis, L. (2004). "Sensitization as a form of knowledge creation and the Win-Win-Win Model..." Scientific Review of Applied Research, Vol VIII, No 2 /2003, pp 89-108, ISSN 1106-4110
- Pareto. Vilfredo (1896) Cours d'Économie Politique Professe an l' Université de Lausanne Vol. I, 1896; Vol. II, 1897
- Pareto. Vilfredo (1906) Manual of Political Economy 1906
- Ricardo David (1817) the Principles of Political Economy and Taxation London John Murray 1st Ed 1817\ edition
- Rousseau Jean Jacque (1762) , "Du Contract Social ou Principes du droit politique" AMSTERDAM MARK MICHEL REY MD CCL XII Retrieved EDITION, Euvres complètes, éd. B. Gagnebin et M. Raymond, Gallimars, 1961-1995, 5 volumes
- Sen, Amartya K. 1970 [1984], Collective Choice and Social Welfare, ch. 3, "Collective Rationality." p. 33, and ch. 3*, "Social Welfare Functions. [Crossref](#)
- Smith Adam (1776/1778). An Inquiry into the Nature and the Causes of the Wealth of Nations 2 (2 ed) London: W. Strahan; T.Cadell. Retrieved 10 March 2015 via Google Books
- Stiglitz , J. (1987). "The causes and consequences of the dependence of quality on prices", Journal of Economic Literature, vol. 25, pp. 1–48
- Stochr, W. and Taylor, R. (1981). "Development from Above, or Below?" Wiley-Chichester Ed, 1981
- Theocharis, R. (1959). "On the stability of the Cournot solution on the oligopoly problem" Review of economic Economic Studies 1959;27:133–4 [Crossref](#)
- Thirion, S. (2000). "Flag Theme and Local Development", LEADER Magazine, European Observatory for the Leader EU initiative- 2000, Fall, Bruxelles iss 8 Aug 2000 (p.p
- Thomas Kronberger AND Leonidas A Papakonstantinidis (2019) "The Win-Win-Win Papakonstantinidis Model": Bargaining Possibilities When there are Three Involved Parties on a Labour Market and two of them are Active Decision- Makers. –Cases Greece-Germany" International Journal of Innovation and Economic Development ISSN 1849-7020 (Print) ISSN 1849-7551 (Online) [Crossref](#)
- Ulen, T. (1999). "Rational Choice Theory in Law and Economics" Northwestern University Law Review vol 95 issue 4 Northwestern University School of Law Printed in U.S.A
- Varoufakis, Y. (2006)"Game Theory": (trnsI) Edition: DARDANOS-GUNDEBERG pp 136-167 Wilkinson, K. (1991) The Community in Rural America Greenwood Press: New York, NY