

A New Assessment Method of Creating a Sustainable Future Economic-Social-Political, Population/Consumer, Food Consumption for Family/Household, Environmental Evaluations on UNIT Basis: Per Adult Human Unit Method (PAHUM) = (Age and Gender Corrected PC^{agc}) versus Per Capita (PC) Evaluations

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Executive Summary

Communication of Lisbon Strategy of EU28 sets out an integrated package of measures to deliver more sustainable consumption/production (including food), better environmental protection, and correct population/consumer family/household evaluations by using appropriate and more meaningful methods. It lays ahead as one of the key challenges for EU28 and developing countries.- PC, Adult Equivalent (AE) and Conjoint Analysis Theory evaluations and implementation are not sufficiently dynamic and forward-looking to drive the performance of methods upwards. Those evaluations do not serve the above purpose. On PC, AE method use overall, voluntary and regulatory instruments are not sufficiently connected and potential synergies among the different instruments are not exploited. Divergent national, international approaches send conflicting signals to researchers, producers and consumers. As a result, the full potential of the internal food market of EU28 and its impact on environment are not realized and evaluated on properly identified UNIT basis. Misidentified UNIT (PC) for measurement would not give correct results and if one installs correct assumptions on the wrong unit, the falls results will start following each other.

Understanding the demographics of the consumer-population (is generally including age, gender, income, schooling, occupation and so on... is critical for the success of the global economy and businesses. Not only do you need to understand them in order to decide exactly what your product and services mixes will include, but this information will also affect pricing, packaging, promotion and place. We have to talk about just one of these factors to see how demographics affect consumer choices. Definition of consumer - one that consumes, especially one that acquires goods (Including food) or services for direct use or ownership rather than for resale or use in production and manufacturing. In order to properly evaluate a community/target population or consumers for the best location for consumables, one must know the demographic profile of the potential consumers (i.e., one day to one year old baby need baby food and diaper, on the other hand 80+ year old need healthy food and sometimes grownup-diaper also) on unit basis.

*Yet, increasingly rapid global changes including changes in population (Consumer) dynamics, from the melting of the icecaps to growing energy and food resource demand are challenging this objective that need to be revaluated and assessed correctly on **UNIT** basis. As indicated above, all the conclusive predictions are made on PC (unit/criteria) basis, including ourselves, most research scientists, international institutions (i.e., 2015 Economics Nobel Prize winner Angus Deaton "for his analysis of consumption, poverty, and welfare"- also the other Nobel Prize winners in economics). As indicated above, Per Capita (PC) is one of the mostly used but also one of the misused and one of the confused two words used in every aspect of evaluations of global macro economy including organic/conventional food consumption/production, environmental and other predictions. State of the art of this short summary is to explain the practical application of the developed PAHU Method - **(Gender and age corrected Per Capita-PC^{agc})**, (Copy-right©1989) - to revaluating demographic structure, consumer and food consumption potential of developing and developed countries, its safety (and efficacy) as needed for the period of next 33 years until 2050 plus the other areas that it has applications including environmental issues.*

*Nutrition and energy expenditure is a very important aspect of human life and human productivity. **Method** (Copyright©1989) deals with primarily the requirement for a standard reference individual*

(20-24-year-old = PAHU) Basal Metabolic Energy which are also calculated for each “5-year-interval” age-groups. An age group of 20-24 was chosen as a standard adult age group (PAHU or reference person-UNIT) for both male and female because up to that age, the growth represents the bone and the muscle, whereas after that every increase almost always represents fat. Ten years later after the development of PAHUM, 1993 - Economics Nobel Price winner Fogel (2000) developed and used the terminology “**techno-physio-evolution**” in his evaluations concluded that basal metabolic energy is the basic, plus energy used for productivity are essential elements of macro economic production.

Based upon the work performed by many national and international scientists and scientific institutions, the data on population (Consumer) gathered and evaluated for organic and conventional food production and consumption has traditionally being presented on a “Per Capita” (PC) basis. Per Capita is defined as “equal to each individual, per unit of population, for each person.” When data is presented on PC basis, the assumption must be made that one month-19-year old (for example, a 6-month-old baby) and older age group 65+ will produce and consume as much food as a 20-24-year old mature person and/or emit as much carbon dioxide. We have to accept the fact that we all used PC evaluations, predictions and comparisons in our lectures, seminars and also presented papers on that basis; media and public supported it and government legislated for it and used it in the statistical predictions and documents (IFPRI, EFSA, EUROSTAT, World Bank, IMF, and others). During the last twenty six years of my involvement in collecting, organizing and researching information, I am trying to create awareness of error inherent PC evaluations (16-19.4 percentage unit error) and attempting to influence the national and international direction of obtaining precise food consumption and food production projections and considering a nutrition and goods monitoring system which will standardize all nutrition intake reporting done by the various agencies of both developed (EU) and developing countries’ families and households evaluations. Projecting consumer and the food requirements, especially for the developing countries where malnutrition is very common, practical application of the PAHU Method in other policy implications was always felt.

My findings indicate that the global inconsistency problems exist not only among EU states and its institutions but also at international level, due to different definitions and method assessments. Per capita (PC), adult equivalent (AE) and Conjoint Analysis Theory evaluations gives too much space for arbitrary decisions that can adversely affect the comparability of demographic statistical data, demand for goods, food consumption and the effectiveness of the government economic-social-environmental policies.

As scientists and policy makers, executives, we have to eliminate the error from the beginning at the planning stage. This is not function of ineptness on the part of scientific work, it is simply necessary to reduce the complexity of the system and the evaluation of the method that we are using and PAHU may help in this matter. While we are making the food policy and other macro economic decisions in a narrow margin of test significance levels, we do not consider the minimum 16-19.4 percentage unit unintended error coming from the use of PC evaluations in our econometrics evaluations. The erroneous use of PC use hardly been challenged in the literature as if it is the only unit that should be used in every aspects of economics evaluation of food consumption (Conventional and organic) and using the detailed anthropometrics criteria (age and gender) is always neglected. Knowingly insisting on the unintended error coming from PC approach does not justify statistically tested results of the projections. Considering its philosophy and the ethics behind it, “Everybody is making the same error why not me” does not justify its excuse. At the end of 28-year evaluations (Published and presented at national and international congresses and journals), it was concluded that developed **PAHUM = (PC^{gac} – gender and age corrected PC)** evokes innovation playgrounds of not only researchers, institutions also the decision makers of the developed and developing countries.

PAHU/PC^{gac} method has impact in many areas and can be used in evaluation in many areas and has many practical applications:

1. *EU Member States Financial Fund contribution distribution may be based on $PAHU=PC^{gac}$ basis that will minimize the disruption caused by the failure of one of its member state and this mechanism will limit the moral hazard and help build a substantial trust and market discipline,*
2. *Comparing household and family food consumption on PAHU-UNIT basis will be more realistic,*
3. *Comparing food consumption of equally populated developed and developing countries will show the differences, huge gap and real picture and hunger issue,*
4. *Since Turkey is a candidate country to get the highest number of parliament members (96) after 2020, EU Parliamentary seat distribution may be based on PAHU will be fair and create equity,*
5. *Evaluations and solutions for an ageing society may be able to offer to deal with the consequences of demographic change and planning on pension fund policies,*
6. *All reported and evaluated statistics including GDP will be more realistic by eliminating 16-19.4 percentage unit error due to PC evaluations and eliminating the error from the beginning,*
7. *Number of refugee distributions of sharing them among EU Member States again may be a better approach and eliminate the moral hazard for all sides.*
8. *Alcohol consumption: To get around this and investigate the alcohol consumption issues and evaluating each study area into its component costs (e.g. health, crime, total health expenditure etc.) may be done on a standardized methodological approach – PAHU - age and gender corrected PC that creates a scaled indicator.*
9. *Environmental CO2 and other gasses emissions: Many analyses of the impacts of population on climate change fail to take these differences into account. Age structure, household size and spatial distribution all affect not only on error bound PC but also on defined UNIT ($PAHUM = PC^{gac}$) emissions and should be integrated into climate change modeling. Analyzing population dynamics on well defined UNIT basis may clarify the reasons and how interventions can most effectively reach the emission values and their effect on environmental pollution. Advances in climate change modeling now enable best estimates and likely assessed uncertainty ranges to be given for projected warming for different emission scenarios. Results for different emission scenarios are provided explicitly in PAHU basis may help to avoid loss of more accurate environmental policy-relevant information and finally,*
10. *Other related economic issues that researchers are trying to evaluate, i.e., globally income inequality remains relatively high due to greater disparities between regions, genders, ethnicities and education that can affect a country's social stability, limit the expansion of the middle class and the country's economic growth potential. Evaluation of the rising income inequality impacts consumer spending patterns in both developed and developing countries on PAHU basis may illustrate growing income disparities that create opportunities for business in the luxury and budget goods sectors but can limit the growth of the middle class segment.*
11. *Defense cooperation between member states was given more weight when the EU last updated its treaties, with a mutual defense clause introduced in the Lisbon treaty requiring member states to come to each other's aid. In a major speech at the Sorbonne University in Paris, Mr. Macron said he wanted the European Union to have "autonomous capacity for action" through a joint military force. He also called for a shared defense budget and common defense policy, and a European military training academy. EU Member States defense budget contribution distribution may be based on $PAHU=PC^{gac}$ basis that will minimize the disruption caused by the failure of one of its member state and this mechanism again will limit the moral hazard and help build a substantial trust and military discipline.*

Ethical considerations and moral turbulence (PAHUM vs. PC application and evaluations)

Ethical considerations will be in the center of intellectual life, and engagement with PC issues will form a larger part of the fabric of daily scientific life than is the case today. The question is – is it ethical to interfere with on PC evaluations and assumptions or apply the $PAHU-PC^{gac}$ method that is based on human natural process of energy expenditure for survival and productivity of human beings for economic development. The complexity and intensity of the debates on this issue has given inside

a new sub-discipline, bio-economic ethic. The accumulation of the scientific knowledge and new technologies that underline the major improvements especially in the developed countries in the USA and EU improved the standard of living in health, increased longevity, better nutrition etc. that interferes with the natural process in some cases and question rises whether it is ethical or not while developing countries populations are suffering. Wilson (1993) has warned that humanity may be committing suicide by disregarding environmental concern. On the other hand use of genetic engineering to create new food products or drugs by creating "Genetically engineered organisms (GMOs)" to increase agriculture productivity may and will inadvertently introduce deadly new organisms and produce new scourges and problems. Fogel, (2000) on the subject indicated that the persistence of gloom, despite a credible record of achievements, suggests that the malaise about the economy is more moral and physiological than economic. It should be emphasized that everything seems inadequate when measured against perfection. So, even technology has become a symbol of failure because it is incapable of delivering perfection. Here, the developed PAHU-PC^{gac} method in some instances may be incapable of delivering perfection. So necessary adjustments may eventually brought as required to make it closer to the perfection. On the other hand recently **DeMartino and McCloskey (2016) in their recent book indicated that for more than a century, the economics profession has extended its reach to encompass policy formation and institutional design while largely ignoring the ethical challenges that attend the profession's influence over the lives of others. Economists have proved to be disinterested in ethics, which, embracing emotivism, they often treat as a matter of preference, and hostile to professional economic ethics, which they incorrectly equate with a code of conduct that would be at best ineffectual and at worst disruptive to good economic practice. But good ethical reasoning is not reducible to mere tastes, and professional ethics is not reducible to a code. Instead, professional economic ethics refers to a new field of investigation—a tradition of sustained inquiry into the irrepressible ethical entailments of academic and applied economic practice. The risks and costs of establishing the field are real, but a profession that purports to enhance social welfare cannot avoid them. Philosopher Friedrich Nietzsche was concerned about the use of knowledge as power. He indicated that as human we have a desire to interpret. How we interpret is depend on our values. "Our interpretations (i.e., knowledge) work as a tool of power and can be used in beneficial or destructive ways. A healthy use is when we use knowledge to live without the need to compare ourselves to others or to gain self-worth by denigrating others". The erroneous use of PC to evaluate animal and plant agriculture food production and consumption predictions has rarely been directly challenged. We should consider the results and impacts of this evaluation on our food policies, environmental issues at the national and international levels. It is very important that more and better information is needed for the scientists to guide government action related to nutrition of animal and plant origin food.

- In conclusion: At present, we are trying simply to find the right answer with the wrong unit, which is PC.

In our data reporting process we must all go beyond what makes us good what makes us right.

- As scientists we have to eliminate the error from the beginning at the planning stage.

- While we are making the policy decisions in a narrow margin of test significance levels, we do not consider the minimum 16-19.4 percentage unit unintended error coming from the use of PC evaluations in our econometrics evaluations.

- In exploratory scientific experiments a 5% significance level is typically used. We can tolerate 1:20 chance of false alarm, since the cost of being wrong is low.

- A low level of 5% might be suggestive.

- A level of 1% compelling and 0.1% convincing.

- This is important for interpretation of the results. Some times apparent implausible coefficients remain statistically significant despite careful efforts at specification when we use PC.

PS: For further detailed information – web site: USA- Journal of Environmental Science and Engineering, Vol. 4, Number 7, July 2015, pp. 336-351.

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