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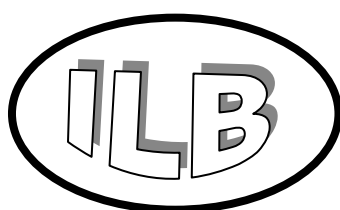
System Dynamics and Innovation in Food Networks 2014

*Proceedings of the 8th International European Forum on System Dynamics and Innovation in
Food Networks, organized by the International Center for Food Chain and Network
Research, University of Bonn, Germany
February 17-21, 2014, Innsbruck-Igls, Austria
officially endorsed by*

*EAAE (European Association of Agricultural Economists)
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INFITA (Intern. Network for IT in Agric., Food and the Environment)*

edited by

U. Rickert and G. Schiefer



Demand Constraints and New Demands: Regulations, Markets and Institutions Efficiency (A Case Study for Cape Verde)

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Abstract

Economic efficiency is a key issue for economic research and for policy design, and certainly for food security challenges. In the food system dynamics the understanding of changes and trends is crucial to improve our capacity in dealing with sustainable development and quality of life objectives. The links with food consumption behavior, mainly in less developed countries are main drivers to understand changes in the food system. Food system efficiency evaluation is necessary, in regard to production/consumption efficiency, market and government/governance – regulations and institutional efficiency, and efforts should be made to improve our capacity to deal with those methodological needs. In many situations, in the real world, data and measurements are difficult or even impossible in numeric/quantitative terms. Frequently, qualitative evaluation is the only way to proceed, but measurements and numeric references are still important, mainly when changes over time is the focal aspect of the research about real world conditions and respective changes. The actual paper follows a structural food system model (WFSE – World Food Security Equation) to show the important role of Markets and Institutions “vis a vis” regulation practices directed to improve economic efficiency subject to demand behavior in a country case study.

Cape Verde is a very challenging country in regard to “food security status,” with great success in global/macro terms in the last 10 years, where now the main problems are clearly at local level. The present research tries to highlight the global achievements and explores local assessment efforts on food consumption conditions. A specific region is studied, the island of Santo Antão, in a very important production region. Two different communities are analyzed, and three different production systems are considered to better understand the local dynamics and possible interactions among those factors and food consumption habits. The results deserve deeper discussions and further research, with evidences that food habits are very strong factors to be considered, sometimes “over passing” clearly the expectations in regard to income, and also in regard to direct influences between production systems and consumption. Several other studies were compared, providing a good overview about results obtained in several other regions, showing that food consumption at local level is also in reasonable good conditions, which means that solutions for improvements are complex and very dependent on social systems, somehow with a similar position with the problems of the industrialized economies.

Keywords: *Demand constraints, food policy, regulation, institutional innovation and economic efficiency*

1 Introduction

The world continues to face old dilemmas such as how to feed (at reasonable level) everyone born in our society, but now not with the same usual constraints (lack of food production). It is never too much to point out that, today, there is enough food available, but hunger still persists at very significant shares of the population. However food supply needs to continue growing, but being a necessary condition, growth will never be sufficient (to solve the problem) to provide a well fed population worldwide.

Supply constraints were the main limitations for solving hunger problems in the past, up to mid 1980's. However in the nineties (1990's) it becomes clear that “Demand Factors” had to be taken into

consideration, and even more, food systems changes would be and will be driven mainly as a function of the Demand Behavior factors, which included also technological changes.

The actual research addresses both theoretical/conceptual matters and empirical research, using real examples, aiming to offer a new vision and some possible solutions, food policy measures and economic development perspectives, to achieve a better food system, where hunger will no longer be present and/or will be at least significantly diminished at a very low and marginal level.

2. Background and Literature Review

Efficiency concerns are a “corner question” and a key issue for technical approaches to the study of the food system. Indeed, the economic problem, in a very synthetic way, can be considered to exist in a “dual form.” The one considering how much can be produced, with the resources and technology available, and made available for consumption, and, on the other side, how to affect and provide people access to the production in a sustainable way for consumption. However, this view can be seen as an old fashion perspective, moving from production to consumption, somehow with the “dual model” separating the problems and dealing with them on a separate manner. It seems useful today to have a more integrated perspective, even because production cannot be seen separated from consumption choices. The World moved from a supply driven economy, in which consumption choices were clearly dependent from available products and shaped with those available choices, to a world somehow “abundant” in supply capacity. Production choices are now much more dependent from consumption preferences, and the “trigger” in economic action is now made possible starting with Demand Preferences and Respective Consumer choices. Freedom to choose was improved in many economic sectors, and certainly in the food system there are many good examples where huge improvements were obtained. However, the process is not linear, and the interactions are complex. The evidence in the industrialized food products with great innovation, variety/variability in time, form and space for commercialization, turn out to provide as much diversity as never before which increased a lot the consumer choices. At the same time, improvements in technology and requirements in efficiency, such as economies of scale and dimension have limited enormously the number of crops that are now the base of our diets. That is, the world is now dependent and focused on the use of a very small number of crops, and biodiversity on that regard, did not improve.

Beyond this sustainability concern mentioned above in the food system, Demand Behavior is now crucial and every “Manager” wants to discover the best way to answer to “people wants” and believes and much less frequently able to shape this “demand behavior.” Anyway, even when this influence is possible (of course the “best of the worlds” for food managers) the basis is always referred to improving welfare and “utility” for consumers. As a previous concluding remark, consumer welfare and utility level for consumers is in reality the last aim for any production system.

3 Referential Models and Concepts

Models are always simplifications from reality, but sometimes turn out to be very complex and losing some of the appealing purposes which is to make more perceptive the most important interactions among diverse factors and variables highlighting the rationale behind processes and changes in the system.

To understand the “mega trends” in the food system with the development processes and its relation with food security, a very intuitive but simultaneously very complete model (and allowing complexity if necessary) was introduced (Carvalho 2013, 2011): “The World Food Security Equation – WFSE”. This model was based on some classics such as Hayami and Ruttan (1985) and Johnston and Mellor (1984) and also based on the previous author work (Carvalho 1982, 1989), dealing with demand constraints and also with technical and technological changes over time within a “general equilibrium model” developed more recently (in Carvalho 2004,2006), with a conceptualization around the induced economic rational, the so called ICI model – Induced Changes and Innovation Model.

Indeed it is possible to look at the food system changes based on a “general equilibrium model” (ICI model) and/or look at the changes from a more structural perspective looking at the “mega trends.” In

fact, in this paper the author used both approaches, but an effort is made to “merge” the rationale behind the models. Using a structural view with the WFSE, (to understand the changes over time and the actual situation in regard to Food Security in a certain region), at the same time the induced perspective model (ICI) is used to understand changes in a specific context focused on “Demand Constraints” rationale.

Definition: Demand Constraints are the physical and/or economic binding factors which defines the limits for consumption in a feasible and sustainable environment.

Supply constraints is a concept frequently used in “production economics” theory, meaning the frontier of production possibilities given a certain level of technology capabilities, inputs and resources. In an autarky economy (no trade allowed) consumption constraints are equal to supply constraints, since trade is not allowed. This corresponds to the most immediate “absolute” demand constraints, but the world is a “bit” more complex and it is necessary to consider other alternatives. To better include those other alternatives is useful to consider the following definitions:

- a) “Absolute Demand Constraints” can be defined as the consumption possibilities inside the frontier of possibilities of production, and inside the frontier of the possibilities of consumption which are equal in isolation, but different with trade, but should be sustainable in time, space and mode of consumption which will include also the binding physical needs that are necessary to fulfill human desire for consumption, again in a sustainable and healthy environment.
- b) “Relative Demand Constraints” are defined as the set of factors that can avoid social effective demand to reach the consumption level related to the existing potential demand (preferences), given the availability of resources, technology and knowledge for a given society in a sustainable development process. In other words, given a certain potential consumption choice set, with a given resource base, technological and production capacity, demand constraints will not allow the solution within the consumption set to be on the frontier of the possibilities of production/consumption (meaning that inefficiencies exist and can be removed and/or worked out to avoid binding solutions).

Note that the second type of demand constraints, the relative ones and other possible considerations about it, fits very well when we want to look at the “two steps” world – consumption and production considered separately. However a “new demand” perspective for more global and integrated view (linking production to consumption, with production including consumption activities), also fits in the rationale, meaning that, “what we want is a maximization of “Utility and Welfare” and production is now defined as any activity that uses more than one input aiming to obtain (utility) an outcome, tangible or intangible, with value (present and/or future value), indeed a value creation process, (turning consumption into a utility production process).

This value creation process works within a choice of activities, and consumption can be seen as the last chain in the “production” process in which the consumer starts with some elements, use some “technology” and end up with utility. Consumption efficiency considerations are now much more evident as an “economic issue” with potential great interest. Overall, the objective for any economic activity will end up to be, globally:

$$\text{Max } \sum_{i=1}^m U_i = U_i(y_1, \dots, y_n, R_i)$$

i = 1.....m person
j = 1.....n goods
y – several goods
R - income

However, the most frequent analytic tools do not consider that R_i (receipts-income) can also be a dependent variable, very much resulting from choices, at individual level but also at collective level. This remark is very important in a family based economy at first stages of development where self-consumption is very present in the food system. Markets tend to be very weak and sometimes inexistent, and, on the other side, any production improvements tend to have immediate impact in consumption. Whenever economies move forward, the food system is the first to face “demand

constraints,” that is people are not producing much more than they need/use (and are able to consume), and when production improves they are forced to rely on the markets which, much of the time, work very poorly. On the other extreme, at very high income level economies, people achieve a position where income is no longer a significant variable affecting consumption choice in many products (starting with food items). Engler’s law is very well known for most food products. For example, for meat, milk, cereals and so on, people consumption level reaches a “saturation level” with high income in many industrialized economies, and start decreasing consumption quantities with income improvements.

Under this scenario, high income economies, consumption behavior and choices start showing some “new demands” related with new characteristics and some factors related/associated with “the intrinsic value of the product” with the “mode” of use/utilization of the product and other non-tangible variables/factors such as “social leverage” and others associated with ludic/artistic/cultural aspects of life.

“Time Factor” is now also “on the rise” as a “consumption constraint,” sometimes much more important than income in the utility function for consumers, being a finite resource, a natural, non renewable resource for anyone. “Value of Time” becomes indeed a dependent and independent variable in consumption choices, which should be related with “quality of life” to solve the multi-dimensional equation system aiming to maximize welfare and well being, for each of us for all society. The relationship between income availability and “free time” turns out to be “negatively correlated” in most cases and societies, and even families, most of the time, meaning more money in the budget less time available.

On the other side, however, economic development has implied, almost a straight forward relationship with more choices for consumption and definitely more “value for time”/scarcity is raising of a finite resource (“time factor”)....What seems relevant to note is to understand that human needs are not only related with tangible goods and consumption needs but also with intangible goods, such as “free time” to choose and to enjoy other cultural dimensions of the human existence.

To conclude, the actual article introduced the discussion about economic efficiency, starting with an overview about consumption economics as the main focus to solve hunger problems today. The arguments follow from theory and previous research efforts. The next part of the research will be based on empirical results with a country case study: Cape Verde. In this case not only institutional innovation was studied, but also market efficiency questioned and tested, where a clear success have been achieved in macroeconomic terms. With the challenge ahead, “how to make the difference in local terms” to improve local welfare and food security of the families, a specific region is also analyzed looking at human behavior/food consumption and welfare in regard to food security.

4 Cape Verde: A Case Study for Global and Local challenges in Food Security

Cape Verde is a middle income country, changing its status very recently, from a most common classification for African Countries, as belonging to the less developed world. It is an –African country, located in the middle of the Atlantic in front of Africa, about 500 km from the cost of Senegal and Mauritania (around latitude -15º North, and longitude 18º W). The classification change represented a significant achievement, considering how poor the country is in Natural Resource Base endowments, its geographic localization and historical background. One of the most important areas of success is exactly the food system achievements, solving at macro level the traditional dilemma of lack of food, the expected result for countries at similar income level, but even more significantly, for countries without any conditions for local food production in competitive terms.

Cape Verde is an archipelago , with 4 033 Km² and 10 islands, with 9 inhabited islands with a total of 491 875 persons in 2010(ANSA -Food Security Yearbook, 2012). Its natural conditions for agricultural production can be characterized in a simplistic way saying that reasonable soils availability for production are not much more than 40 thousands ha, and edaphoclimatic conditions very much limited

starting with rain fall average around 200 mm, very much concentrated in two months. In some islands there is frequently no rain at all several year in a row, such as Sal and Boavista.

Cape Verde is dependent upon imports to achieve the basic food needs (availability for food consumption). This situation is structural, but needs to be managed aiming to improve the “food security status” of the country. Taking into consideration previous work of the author, for example Carvalho (2013, 2011) and the United Nations (1996) concepts, food security means availability and access, in physical and economic terms, to enough and healthy food intake adequate to achieve a good nutritious status in a continuous and permanent way/path in time and space. Five dimensions are considered, as the main set of factors to be considered in studying food security:

- a) Food Availability;
- b) Access to Food – including logistics, transformation, conservation and so on;
- c) Utilization and Consumption – including all variables related to food quality and nutritious values, but also all variables related to food consumption choices, such as education, habits and cultural background, etc.
- d) Stability of the previous variables considered (and also stability on risks and uncertainty factors);
- e) Vulnerability of the system (including the resistance and resilience to external and internal shocks to the system).

Hunger is still a global problem in the sense that it is present in less developed countries but also in industrialized ones. Today it is important to introduce a more complete concept and start dealing with malnutrition problems, since the world is moving from a situation of lack of food to a situation of food production excess, in terms of availability, but also in terms of consumption possibilities. Simultaneously the evidence shows that many health problems today are food dependent and/or co-related with habits and consumption decisions. This situation, very much recognized in high income countries is already present with great impact in intermediate stages of development, such as the presence of obesity. However, the present focus of the research is to look to the traditional aspects of “the food security equation” for Cape Verde, meaning availability and consumption access.

Given the country characteristics, as referred before, Cape Verde will tend to be dependent from food imports, however local production is much more relevant then it is perceived much of the time.

In general, food problems can be explained due to a systemic malfunctioning economy. In the industrialized countries it is basically a “micro-economic problem” linked with “social diseases,” family vulnerability, marginalization in the market place and lack of social/institutional organizations to answer to the needs; for less developed countries, it is a macro and micro problem, which is a global and local challenge (Carvalho, 2013) For Cape Verde, at Macro-economic level, a set of interventions were performed, dealing mainly with “regulatory innovation”/institutional innovation and the results were very impressive, and let’s say “solved” in most basic dimensions. For local purposes the challenges are still far away from a sustainable and adequate solution and are much more evident.

4.1 *ANSA Intervention and Global Results*

The Food Security Agency, ANSA (Agência Nacional de Segurança Alimentar) was a new regulatory agency created in 2002, with the objective to regulate and guarantee the access and availability of basic food items all over the country.

ANSA was now integrated (in 2013) with another agency ARFA – Agencia de Regulação de Produtos Farmaceuticos e Alimentares, created latter on to provide services related with food quality control and medical/medicine and pharmaceutical supervision. The name chosen to be maintained was the second one, but all the previous functions are maintained of the previous institutions.

In a very simplistic way, it is possible to say that food security and food safety matters are now under the same institutional responsibility. However, the most relevant activity in the first decade of the XXI

century was performed by ANSA, as such, and the focus of the present analysis will be the innovative actions in regulations/institutional matters on those grounds and period up to 2010.

Food availability has been the big issue all over the 5 hundred years of Cape Verde history period. Many times, hundreds and even thousands of people died from hunger because of the climate variations and production failures. For example, Lopes (2010) in an historical perspective point out some of those numbers. In 1862-67 there is references of great disaster in food production, the region losing about 29 thousand persons from hunger (with a total population around 90 thousand). The latest big crisis happened during the second World War Period, and immediately afterwards in 1946, related with the isolation of the region, with loses around 15% of the population. After that, improvements in the logistics and some type of regulation providing outside food supply and better management, avoided human losses such as in the crisis of 1959-60, and again in 1968 (a great drought happened again), but already without any references for human losses. In 1957, the government created some institutional structure to follow imports and exports, providing discipline and rules to the market, such as following the prices, the commercialization margins, information and ability to guarantee the functions of the market.

With the independence in 1975, Cape Verde officials concerns with food availability was very much present, and was somehow influencing the overall political options. The Political leader at that time, Amílcar Lopes Cabral (agricultural engineer), fighting for the independence globally in Africa, ended up linking Guiné-Bissau to Cape Verde. The political movement for independence, which happened making this connection between main land in Occidental Africa – Guiné-Bissau and the archipelago Cape Verde, was certainly motivated also by the fact that Cape Verde sustainability in economic, but basically in food terms, would be very difficult or almost impossible in physical terms.

At this point, it is important to keep in mind, that Cape Verde should be one of the most important cases where food problems have been so relevant and with direct impact in its history. It is certainly in the world one of the countries where people really are concern with Food Availability and Access to consumption, (and this can be perceived in human behavior). With the independence one of the most important measures and structures created was a Public Enterprise – EMPA – Empresa Publica de Abastecimento. This enterprise, with the monopoly of the distribution of basic food stuff among all different regions/islands in the country end up working reasonably well, and provided a public service selling its products without any market competition.

At the end of the 1980's the discussions about more market oriented economy and less centralized economy began, very much mobilized after the fall of the "Berlin Wall" in 1989, 9 th November. During the next decade 1990's, several measures were taken, providing less State/Government intervention and more citizen space for economic activities including food distribution.

The World Bank at the end of 1990's end up promoting the discussion about changing the monopoly structure of EMPA, and how to provide incentives to free market oriented food system. Several studies where done, and one of those was a World Bank Study, whose leadership was performed by the actual author of this paper.

To make a long story short, the Model of ANSA was created, as a result of the World Bank Project, and later on implemented in August 2002. Indeed, some basic principles where put in place. The Agency would be a) very much focused in the basic food products markets (seven products); b) will avoid, as much as possible, any direct intervention in the market place; c) will act as an "intelligence unit" providing the best information possible to all actors in the system and markets; d) will promote fair competition and fight against any "rent seeking" activities; e) will promote information transparency and fight against any asymmetric information tendencies in the system; f) will support the efficiency of the local " market players"; g) will make international information less costly and available to the internal market players; h) will maintained a good and precise information about storage and market products availability, by product and i) finally will study demand behavior, prices and consumer attitudes (and consumption in the different markets), at central but also marginal markets, keeping track of the logistics problems and commercialization margins.

One of the important instruments of ANSA was the food aid received and used to stimulate markets and competitive attitudes. Another important characteristic of the Agency was the complete independent structure from Government direct interventions, and also financial autonomy from Government Budget. The responsibility to introduce norms and rules in those specific markets were also part of the ANSA mandate, but the most significant perspective used can be said in few words: the responsibility to regulate on those specific markets was ANSA mandate, but regulation meaning actions to promote more market oriented activities, with the lowest possible burden in bureaucracy and less direct state intervention, providing stability and regular expectations.

Results – Many data available can be shown to prove the good results obtained, such as price levels, price stability, storage guarantees, based on private actions (not public storage), and comparative behavior among local products and markets and international markets.

The first challenge was to compare the price levels of the basic food products in the market place with and without EMPA, meaning after EMPA was closed and no more public direct intervention in the system appeared. This was done and published in several occasions, showing how ANSA intervention allowed markets to perform making clear that average price levels in 2005-2006 in relation to the previous period with EMPA, up to 2002, were more or less 3 to 5% below in absolute terms, meaning that relative savings were between 5 to 10% for consumers (were indeed obtained between 2002 and 2005/6). No more “words” are necessary to explain how important those results were and still are for poor people.

Let’s look now to the guarantees of the system, based on private operators, “vis a vis” the public enterprise – EMPA, which maintained a storage level around 3 months of consumption as reference. Table 1 below is calculated based on the ratio of storage to consumption per month, meaning the final numbers – months of consumption available in the country in average terms.

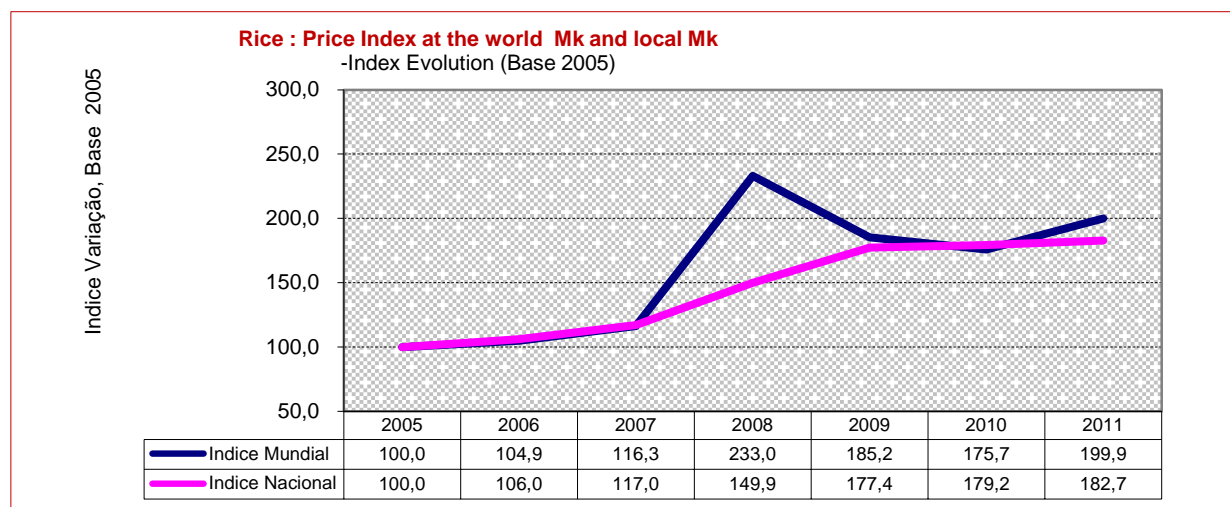
Table 1.
Average Stock – measured in terms of months for consumption

Ratio – Storage/consumption=average months available for consumption							
(Values in Months for consumption)	Year						Annual Average
	2006	2007	2008	2009	2010	2011	
1. Cereals	8,70	11,00	9,95	9,19	9,29	8,09	9,4
» Corn	9,11	14,95	17,62	15,19	15,63	16,98	14,9
» Rice	14,44	15,74	11,36	16,31	17,23	13,75	14,8
» Wheat				9,98	7,85	11,76	9,9
» Wheat flour				3,51	1,98	0,46	2,0
2. Sugar	13,17	16,11	14,47	15,24	12,49	16,11	14,6

Source: ANSA - data base on the main operators responsible for 80% of the cereal marketss (2004 to 2011) and more than 75% of the market for sugar inn the last 3 years in “Anuário de Seg. Alimentar de Cabo Verde 2010-11.”

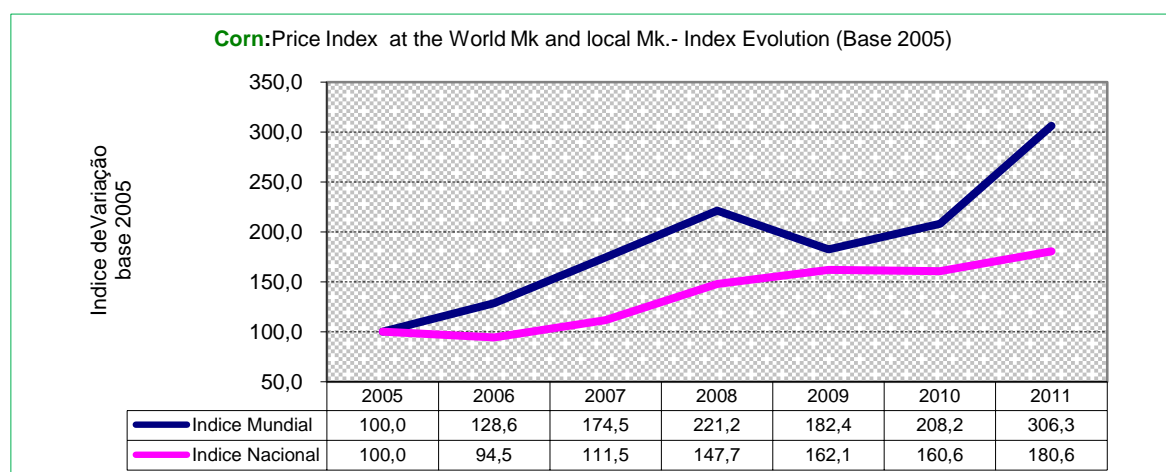
The data on table 1 is impressive, showing around 10 months of consumption guaranteed in the country, which leaves any concern about needs for storage by the public services “out of business.” The private sector is providing not only a very save margin, but relatively stable and very much above any previous records.

Let's look now to the behavior of the internal markets for Cape Verde, with the ANSA regulatory performance "vis a vis" international ones.



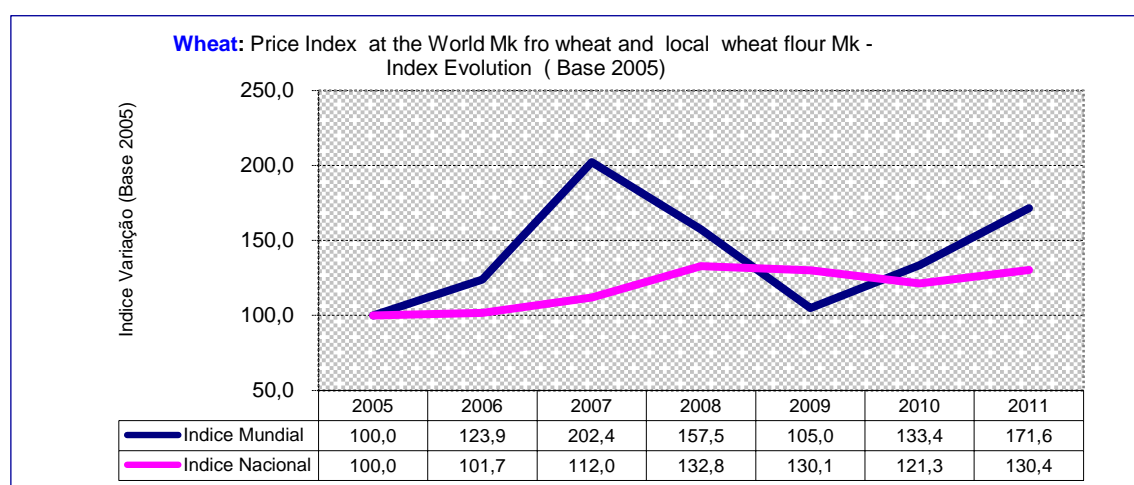
Graph 1. Price Index comparison for Rice, International Mk – blue line and local Index –red/pink line.

Source: ANSA (2013). Food Security Yearbook.



Graph 2. Price Index comparison for Corn, International Mk – blue line and local Index –red/pink line.

Source: ANSA (2013). Food Security Yearbook.



Graph 3. Price Index comparison for Wheat, International Mk – blue line and local Index –red/pink line.

Source: ANSA (2013). Food Security Yearbook

The Graph set shown put in evidence that internal markets for Cape Verde have been more stable, and with price evolution internally very much in favor of the consumers. Many other data can be presented, but in general it is obvious to say that the basic food product markets in Cape Verde behaved very efficiently, and definitely providing consumers with “good and efficient markets.”

The conclusions are very impressive, in the sense that with a food system very weak in production capacity, overall performed very well and pro-poor (a clear “paradox” situation for the system), deserving attention. That is, a new institutional arrangement, the creation of ANSA and its implementation was able to show impressive results. More “regulation” in the food system end up being “more market economy” and better markets in the food system” and not less markets and less freedom to choose. Beyond that, globally, the Food Security Equation for the country at macro level, seems to be “well solved.”

4.2 *Local study – Interfaces of food production systems with food consumption.*

The huge challenge ahead is now how to make those results having full impact at local level, at local markets, but also moving ahead in social terms, looking at consumption behavior, health conditions, quality of life and so on. However, on food security grounds specifically, the research needs will have to clearly look at what can be done to improve nutritious status and well being in food consumption.

Several studies have been performed in our research team at CIAT – Center for Research on Tropical Agriculture at the University of Lisbon, as recorded by Manuel Monteiro (2012). Table 2 below provides the most recent information about consumption habits in the country, regarding the necessary information to evaluate food nutritional status.

Table 2.

Caloric consumption, protein and fat consumption for different samples in different places in Cape Verde and on different years.

Local	Calories (kcal/EH/dia)	Protein (g/EH/dia)	Fat (g/EH/dia)	Obs.
Ribeira Grande	2925,07	97,47	114,84	Monteiro(2012)
Praia (Santiago)	2404,00	64,00	21,00	Silva (2005)
Picos (Santiago)	2979,72	90,05	110,00	Costa (2008)
São Filipe (Fogo) Horticultors	3379,00	116,20	91,70	Silva (2009)
Non Horticultors	3130,00	92,50	76,00	

Source: Carvalho et al (2013) based on data from Monteiro (2012) .

The last available work, by Monteiro (2012), is the one explored in more detail and will be used to provide the basic arguments of the following discussion.

Indeed, there are no conditions to perform any direct comparison among the works selected. However some indications can be derived along with other references and knowledge about the real world and its evolution in Cape Verde, such as the references about global improvements in food consumption quantities, achieving already very good global levels in caloric intake, and also in proteins and fat consumption accordingly with the referential numbers presented.

The nutritional problems today in Cape Verde end up being similar to the most developed countries. Obesity is already a problem, mainly in lower income groups and in “transitional” families changing very fast from being very poor to medium class, and from rural to urban habits. Manuel Monteiro (2012) effort based on CIAT research methods and concerns try to look and identify linkages among dominant production systems and consumption differences.

The research about food production systems and respective interaction with food consumption is indicative, based on a sample of 105 household inquiries, distributed into 35 elements for each group, namely horticulture, dry production, and sugar cane dominant production systems. The study was

conducted in one of the most important production areas, in Ribeira Grande and in the island of Santo Antão.

Table 3.

Caloric, Protein and Fat intake, per person – man equivalent, for different households in different production systems.

Horticulture			Sequeiro – “Dry Farming”			Sugar – Canne			Total – General Average		
Calorias	Proteínas	Gorduras	Calorias	Proteínas	Gorduras	Calorias	Proteínas	Gorduras	Calorias	Proteínas	Gorduras
Kcal/EH/d	g/EH/d	g/EH/d	Kcal/EH/d	g/EH/d	g/EH/d	Kcal/EH/d	g/EH/d	g/EH/d	Kcal/EH/d	g/EH/d	g/EH/d
2959,71	103,12	115,81	2926,65	97,23	117,92	2888,86	92,05	110,81	2925,07	97,47	114,84

Source: Monteiro (2012).

Table 3 data shows a summary of the results obtained. Data provided the information to conclude that all groups are very similar in consumption, and differences are not significant among those groups. However, differences in income and in use of production for self-consumption are very important, as can be seen in table 4 below.

Table 4.

Total Income inferences per year and values for self-consumption in ECV\$.

	Horticulture	“Dry Farming”	Sugar-Cane
Total Income	378088	286962	420632
Self-Consumption	40486	27198	18478
Total income - without self-consumption	337602	259764	402154

Source: Monteiro (2012) and author estimations

Some comments are necessary to better understand those results. First, it is important to say that income from agriculture activities for the households studied in Ribeira Grande / S. Antão Island County, one of the most important in food production in the country is clearly complementary to other sources. However differences in income are significant and mainly dependent from the agriculture activities and return, since in average salaries account for about 200 thousand ECV\$.

The results are very astonishing since income does not seem to have significant impact in consumption, with diets that are very similar. Higher income seems to indicate poor food intake, and lower food production, very much related with the production systems (sugar-cane production). Food habits have an important and significant presence across all families and differences are yet not significant based on income differences. However local food production relevance seems to have a positive effect, mainly in horticulture systems

5 Concluding Remarks

Globally it was demonstrated that Cape Verde is an important example of institutional innovation with great success in dealing with the country macro-economic problems in regard to food security concerns, risks and uncertainties.

At local level the challenges are very present, and somehow, similar to what we can find in more industrialized economies. The “welfare equation” and maximization process can turn any production activity in an intermediary stage to the final stage of producing “utility” to the consumer, and at the same time, consumers need to assume that the usual income constraint can be transformed also on one

dependent variable of their choice. That is, income can also be, up to a certain level, a variable to be included in the consumer's choice set. Policy makers and governmental officials need to consider that social responsibility is there forcing the construction and/or offering alternatives to the consumer to build their own choices to reach a certain income level and quality of life standards.

The local case study was very important to put in evidence that people "are constrained," but many times not only for income, but given the local conditions and cultural background, they do not change easily unless actions are taken on that regard very well focused.

Income is not necessarily the most significant factor changing and/or with influence in consumer habits. Overall the intake values in food consumption are already at very good levels, and there is no indication of hunger problems and malnutrition. However it seems clear that education to improve food habits can, and should be an important issue to be considered to improving the local welfare of the people. Income should be studied along with other variables important to define quality of life standards. New demands need to be well understood for policy makers to make positive contributions to the overall situation. Market functions and demand constraints seems to play an important role, in terms of allowing (or not) raising incomes to the family, through production activities, but sugar-cane production systems are clearly the best way out to improve the income level of the local households, within the actual choice set.

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