

Pinto, Flavio

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# Economics and the Survivor Peasant

Flavio Pinto

flavio@uni-flensburg.de. University of Flensburg  
Munketoft 3b, 24937 Flensburg, Germany

## Abstract

Peasants are survivor actors: they allocate all their resources and deploy refined strategies *for* securing a smooth horizon of consumption. Their stylized behavior is irrational only if development is the goal the peasant should follow. Subsistence as expression for describing rural economies is inadequate, since it doesn't connote the risk of starvation or death that peasants face. The survivor actor poses descriptive demands and normative implications. At a descriptive level, peasant's risk behavior is not ruled by inner preferences only, but depends on his expectations for securing a smooth consumption during the crop cycle. The utility model is apt for describing the survivor actor. Yet the exponent that defines the curvature of the utility includes a component that captures the *aversion to uncertainty* and a component that grasps the expectations about the chances to secure the horizon of consumption. This component defines a *function of risk behavior*, a counterpart of the Arrows-Pratt function of risk aversion. A normative for the survivor actor has to consider what is feasible, not what is desirable; what could be, not what should be.

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## Introduction

This work argues *survival* is the economic motive of the peasants as their behavior is ruled by survival concerns. Survival is the only feasible end to be pursued for most agents of rural areas. With refinements, the utility model and the rationale of the theories of risk describe the survivor peasant. The implications of the survivor peasant are essentially normative. Indeed, the lack of awareness of the survivor nature of peasants is due to the veil stretched by the normative of development.

Former notions of peasants related with the survivor actor appeared since the work of Chayanov in 1926, in the works of Polanyi during the 40's, the safety first of Roy (1952), Georgescu Roegen and Amartya Sen at the 60's, and more recently and normative, within the rural livelihoods. Even though these versions grasped more adequately the economic motives of the peasants, they suffered the shortcomings of the theory and lack of information. The claims of these approaches were additionally overshadowed by a widespread interest in development. The main obstacle, for the recognition of the survivor peasant and the construction of a consequent normative is still the unquestioned assumption that peasants pursue for development even though their stylized behavior reveals survival is their actual goal.

Among scholars, the featuring of peasants with one remarkable attribute has been a tradition aimed to grasp their distinctive behavior. These short characterizations have powerful influence in the picture that scholars build up about the behavioral baseline from which any process for development should start. These expressions pose an idea about the fitness of peasants' behavior with respect to the expected conduct required for development. At the beginning of the last century peasants were considered irrational actors. During the fifties and beyond, it popularized the idea of peasants as subsistent players, very close to the actor described by Chayanov. The triumph of development economists was the acknowledgement of the optimizing peasant. Later it emerged the notion of peasants as risk coping actors, yet this term has not been widely adopted as the subsistent or chayanovian peasant. But those expressions, irrational, optimizing, subsistent or chayanovian, and risk-coping peasant, cannot grasp both the crucial role of risk and the main concern of survivor individuals: the temporal smoothing of their consumption. Peasants are under risk of hunger and they act upon consequently.

The research of development economics has disclosed the functioning of the rural households. Scholars have scrapped up to the smallest element of the peasants' engine in the search of an ill mechanism that after repaired would trigger development. Beyond the explication of the inefficient behavior from the peasants' inner aversion to risk, the ill device has not been found. Yet, these researches have revealed that the strategies of rural households are for smoothing consumption in front of risk, not for growing on wealth.

The research in development economics has uncovered the survivor peasant, but the lack of questioning of development has impeded its discovery. The refinement of theories and

tools developed during the 20<sup>th</sup> century, that allowed grasp the economic behavior of peasants, has not been accompanied with a similar evolution of the normative analysis, focused since the 19<sup>th</sup> century on the strengthening of markets for credit, insurance and productive technologies. Development maintains an unquestioned status that impedes an open exploration of the normative implications of the survivor actor. Both the eagerness for the alleviation of poverty, the goodness of economic progress, and the soundness of the perfection of markets have probably been sufficient arguments for neglecting the inquiry to the normative of development. But there is an overwhelming fact impossible to disregard: the recurrent failure of the recipe based on the perfection of markets. A critique to development is not feasible from its desirability or soundness. The questioning is about the attainability, reliability and durability of policies for the perfection of markets. Peasants are under siege by risk of starvation and policies for promoting the perfection of markets don't fit with the basic concern of the rural actor.

The paper first explores both the ideas developed during the 20<sup>th</sup> century that serve today as basis for the economic description of the peasants, and the theories aimed to grasp their motives. In the second part, the stylized behavior of peasants is presented as optimal behavior for surviving. This part also shows that the behavior toward risk depends on the expectations of the households. The third section develops an analysis for disentangling actual risk behavior observed in peasants from inner attitudes toward risk and shows the shortcomings of the theory of risk aversion of Arrows and Pratt for describing with precision peasants' risk behavior. The analysis leads to define the concept of *aversion to uncertainty* in replacement of the usual concept of *aversion to risk*; and the function of *relative risk behavior* as a counterpart of the function of *relative risk aversion* of Arrows-Pratt. Based on these concepts a model describing the economic problem of a survivor actor is developed. From the results of the model and in concordance with the message of this article, the fourth part outlines a normative for survivor actors.

## 1 The Survivor Peasant in Economics of the 20<sup>th</sup> Century

### 1.1 From the Irrational to the Optimizing Peasant

The ideas shaping our current discussion of the survival nature of peasants were already present at the beginning of the 20<sup>th</sup> century. The interest on the development of Africa and India was already present. The discussion of British scholars and merchants interested in the cost effective provision of tropical goods had on one side the prejudices about the rationality of the Africans and Indians, and on the other the analysis of the economic conditions of these lands<sup>1</sup>.

During the twenties it appeared a book of Alexander Chayanov describing in a systematic way the peasants<sup>2</sup>. The economy in which peasant households develop their economic

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<sup>1</sup> (Baillaud, 1906; Dodwell, 1910) Dodwell presented an extensive document about the economic problem of Indian peasants: permanent indebt, illiteracy, subsistence.

<sup>2</sup> Referred in Thorner (1986).

activity was by him called *natural economy*. In a natural economy, Chayanov argued, the “human economic activity is dominated by the requirement of satisfying the needs of each single production unit, which is, at the same time, a consumer unit”<sup>3</sup>. The balance between consumption and drudgery should therefore appear as a stable ratio, whose exact value depends on other variables like ratio between the number of working members and the total number of consumers within the family, labor intensity, land, etc. A central thesis of Chayanov was that the theory of “capitalist” economy was unable to describe the peasant family, since the variables used to model the unit, namely prices of inputs and wages, interest and capital used to calculate profits, couldn’t be used in a context with absent markets<sup>4</sup>. The balance between work and consumption constitutes a first approach that very likely fails to predict the equilibrium, since it ignores all the considerations of risk. It is worth to notice Chayanov’s book doesn’t have comments about the role of risk in peasants’ economies. The lack of awareness about the crucial role of risk in peasant economies lasted until the seventies. During the sixties gained popularity the phrase *economies of subsistence* for characterizing the peasant economy. This expression has been largely associated with the chayanovian or autarkic peasant. There are at least two features outlined by the expression: the disconnection of peasants with the market-oriented economy, and the lack of awareness of the role of risk in peasant economies.

The value of Chayanov’s work doesn’t rest on the claims he used to justify his research. These claims seem outdated. Economics has advanced in the model of the economic actor and in the comprehension of risk at several stages, i.e. the theory of absolute risk aversion of Friedman and Savage, the theory of relative risk aversion of Arrows-Pratt, the theory of asymmetric information and the understanding of risk sharing. Additionally scholars have developed tools for modeling the economic units submerged in imperfect settings. The modern modeling of peasant household doesn’t demand as assumption the existence of capitalism. Today it is possible to carry out the modeling of an autarkic household based on shadow prices, subjective discounting, and utility functions whose maximization is not necessarily attached to the maximization of profits. The legacy of Chayanov comes fundamentally from his realization of the central motives of peasant families around their survival. Additionally, it is also remarkable to realize the null concern of Chayanov about the rationality of the peasants. For him, they are rational.

At the beginning of the 20<sup>th</sup> century economics was achieving a scientific status<sup>5</sup>. This progression was synthesized in a seminal essay of Lionel Robbins published in 1932. The main message of Robbins was that economics has nothing to do with ends, but with the conflict between scarce means and ends. The universality of ends gave to economics a scientific status, and provides a scientific support to the idea that the economic actors are not obligated by destiny or by the soundness to follow certain economic end. But even though Robbins’s essay is nowadays considered a cornerstone of neoclassical economics, its message has been overshadowed by the interest on development as the unique end to

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<sup>3</sup> Chayanov, p. 4.

<sup>4</sup> Ibid, p. 3.

<sup>5</sup> As presented in the book “The Scope and Method of Political Economy” of John Neville Keynes, 1891

be pursued by all actors everywhere. Economics maintained the prestige of science though its cornerstone, i.e. the universality of ends, since this time has been ignored in practice. The political concern for the advance of the communist world and the western commitment with the Marshall plan for development tided the balance and narrowed the scope of economics to development as the unique end to be pursued by everybody including the peasants.

During the forties the economic anthropologist Karl Polanyi emerged as the solitary voice warning the consequences of development in rural areas. Economic anthropologists<sup>6</sup> claimed attention on the dismantling of rural world by the new deal. The discussion raised by anthropologists was indeed on the economic motives of peasants. Polanyi shows that *"in traditional bands, tribes, and kingdoms, the institutions through which goods were produced and distributed were "embedded" in –an inseparable part of– social institutions: that the "economy" functioned as a by-product of kinship, political, and religious obligations and relationships"*<sup>7</sup>. While orthodox economists worked on normative issues by assuming that peasants pursue (at least should) for development as the doctrine demanded, Karl Polanyi and other economic anthropologists warned that the social organization of rural communities of Africa and Asia were embedded on traditional modes of production, also acknowledged as subsistence production<sup>8</sup>. Polanyi claimed for historical considerations about peasants' origins, ethos and customs. The claim of economic anthropologists was not a refuse of development and growth for rural peoples, but on the features and historical trends that development economists should consider. The description of peasant households in economic anthropology lied on different tenets of the description pursued by economists. While rural households were considered by development economists as isolated cells and production units, the description proposed by economic anthropologists focuses on the relationships among households. Economic anthropologists centered their attention on the cultural and social environments ruling the economic behavior of the households<sup>9</sup>. The modern research of development economics in risk sharing institutions seems to give soundness to the importance of cultural and social structures of rural areas, recognized since the 40's by Polanyi and economic anthropologists. The social forms in charge of the economic allocation are today known as the rural institutions for sharing risk. The modern economic language accounts for these structures in a different way. Polanyi and his colleagues defended these structures not only from their economic function, but from their cultural value. In fact, the current research in rural areas is basically focused on the microeconomics of risk sharing institutions<sup>10</sup>.

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<sup>6</sup> Dalton (1971, p. 3) points the origin of economic anthropology in the work of Malinowski (1922) and others like Firth, but the field largely developed from the work of Karl Polanyi (1944). Between the sixties and the seventies –see for example *Economic Anthropology and Development* (Dalton, 1971) and *Tribal and Peasant Economies*. Ed. George Dalton (1967)–, further contributions to the understanding of the peasantry are due to Dalton and others including Paul Bohannan, Clifford Geertz and Eric Wolf.

<sup>7</sup> Dalton, 1971, p. 13

<sup>8</sup> Dalton, 1962, p. 361

<sup>9</sup> Dalton, 1971, p. 218

<sup>10</sup> Barret et al 2001; Fafchamps et al 2003; Murdoch 2002; Hemskerk et al 2003; Skoufias 2007.

The contributions of economic anthropologists were sketched and criticized as ideological and noisy for development. Anthropologists were tacit if not directly accused of presenting the peasants as irrational. The concept of economic rationality attempts to be free of values. The definition of economic rationality was formulated by Von Neumann and Morgenstern within a game theoretic framework. But the expression holds values. As far as the literature about rural development of the beginning of the 20<sup>th</sup> century allows observe, the discussion about rationality roots in the incomprehensible behavior of peasant and primitive societies. Indeed, rationality emerged as a problem, as western merchant demanded goods and inputs of tropical regions at competitive prices. Other scholars observed “peasant values” as obstacles for innovation<sup>11</sup>. In other words, the problem of peasants’ rationality emerged from the challenge of transforming those primitive and peasant communities into the western economy. The allegation against economic anthropologists was not at the technical free of values level, but at the ethical level. The accusation encloses a defense of the intellectual capabilities of peasants and some indignation. But Polanyi’s concern was that the tissue of social relationships existing among rural and primitive societies was destroyed by the market society imposed by the western society. Polanyi emphasizes the fact that markets as nowadays they are understood have not existed before our current western civilization.

The scholars’ discussion during the 50’s and 60’s was dominated by development. Peasants were recognized as rational, though subsistent actors. The subsistent peasant was associated with the chayanovian peasant. Both expressions denote isolated units engaged in self subsistence. But it can be observed, these expressions lack of awareness on the role of risk. The interest on risk was firstly attended by Friedman and Savage in 1949. Friedman’s contributions were fundamental, both in risk and consumption. In risk, he offered a first approach that integrated risk in the microeconomic analysis based on utility functions. In consumption, under the Permanent Income Hypothesis, Friedman argued that economic actors make decisions on consumption regarding their expectations about future trials of income, more than on present income, as presented by Keynes.

In 1952 Roy proposed the safety first theory to conciliate the utilitarian approach and the insights provided by Friedman and Savage, with the observed reluctance of peasants to policies. For Roy, the undesired behavior of peasants is explained by survival motives taking into account the inherent risk of rural economic contexts. Unfortunately, these contributions were hidden by the failure of his bet for predicting peasants’ behavior based on the pursuing of certain fixed and well known rules. Roy proposed that peasants maximize their utilities by minimizing the variance of the sources of income. In order to do that, Roy’s hypothesized that peasants follow fixed rules and disregard other economic options. He argued, to maximize Utility, peasants minimize the risk of failure. They

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<sup>11</sup> *Dodson and Bose, 1962; Bose, 1962.*

attempt to maximize their chances to survive. However, beyond these aspects favoring the approach, it has been theoretically questioned<sup>12</sup> and experimentally rejected<sup>13</sup>.

Wiens (1977) criticized the interpretation of a certain minimal consumption, because *"if one accept this, one must be prepared to argue that farm employers and landlords act in collusion with farm laborers and tenants to maintain a wage level that is higher than would be determined by competitive equilibrium"* (p.48). There is no factual or institutional evidence of such collusion. Additionally, if peasants are looking for a minimal and safe level of consumption, it is necessary to accept they are not maximizing their utilities, but trying to maintain their consumption at a fixed level. Peasants do not want to maximize their utility functions, but *to maximize their chances to survive*<sup>14</sup>. Under the safety-first rule, it is considered all the strategies deployed by peasants are fixed strategies, like institutional mechanisms, to achieve a fixed, low, but safe level of consumption. Peasants as risk-averse actors develop conservative strategies viewed as rules for safety, to maximize their chances to survive. Binswanger (1982) and Shahabuddin et al. (ibid) rejected experimentally the safety-first rule. They proved the safety-first rule doesn't predict peasant behavior. Furthermore, the safety-first rule became a normative approach: if peasants search for minimal but stable consumption, policies should be focused on such minimal level. This posture provoked discussions because of ideological biases. Yet, the problem of the Roy's approach was not the principles it rested upon but, as it will be argued, the definition used for risk and the assumptions of peasants as being risk averse only. The safety first failed because its bet was to predict peasants' behavior from immovable risk-averse strategies.

The father of the modern approach in economics for rural development is Theodore Schultz. His work was already acknowledged before the fifties though his book published in 1964, is usually taken as his seminal reference. As the book's title, the task he tackles is *"Transforming Traditional Agriculture"*. Schultz's work is contextualized by the green revolution (1940–1960) and the trails of the Marshall's plan, that gave impetus to the problem of peasants' development. His contribution to the discussion of peasant development has had long term impact both in positive and normative issues. It prevailed as the mainstream in economics.

Theodore Schultz channeled the problem of peasant development in an economic framework. According to Schultz, the economic analysis plays as an instrument against political creeds about rural economic agents. He argued that peasant households are rational and efficient units: they operate at the optimal levels according their resources. He consequently defended the rationality of peasants. His position intensified the discussion about the rationality of peasants, and as counter argument some authors showed negative supply responses to increases of demand<sup>15</sup>.

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<sup>12</sup> Wiens, 1977

<sup>13</sup> Binswanger, 1982; Shahabuddin et al., 1986

<sup>14</sup> Shahabuddin et al. 1986, p.123

<sup>15</sup> See for example Adams (1982).



The focus of Schultz is the *transformation* of traditional agriculture, as a response to the vision of tradition and cultural forms defended by anthropologists, or the understanding of rural economies as different from capitalist economies, as stressed by Chayanov and Georgescu Roegen. In 1960 Georgescu Roegen<sup>16</sup> claimed for a theory for peasants' economies, under similar regards of A. Chayanov and development anthropologists. He disagreed with the Marxists' vision of peasants but also claimed the inability of the –he called– standard economic theory for grasping the economic features of peasant contexts: absence of capitalists' institutions, no markets and search for subsistence and not for wealth (p. 4-5). Georgescu Roegen didn't focus on the modeling of the household, but principally on the role of the peasant sector on economic development. From his explorations, Georgescu Roegen claimed for an Agrarian doctrine (pp. 33-34).

An aspect of Schultz' doctrine<sup>17</sup> is the role of prices in the transformation of agriculture. A high price of one commodity relative to other commodities' prices would finally induce its production. For policy design the implications are straightforward: if rural actors are rational, price incentives and improvements on productivity are the basic instruments to overcome rural poverty. Schultz's book proceeded from a diagnosis to a general strategy for transforming traditional agriculture. The diagnosis of Schultz, from which the transformation of traditional agriculture should take place, based in three points, whose rationale can be presented as follows: traditional agriculture is efficient (peasants obtain the maximal benefit of their activity). Other options for earning additional income do not represent real incentives. Additional investments on traditional forms of production do not provide significant increments on income. Therefore, traditional agriculture though efficient reproduces stagnation. From this diagnosis, Schultz proposed three basic questions to be addressed: i) the possibilities of rural communities to increase substantially their production by an efficient allocation of the agricultural factors; ii) the key agricultural factors responsible for the highest marginal productivity and iii) the conditions for incentive investment in agriculture. For Schultz, the agricultural factors that can overcome stagnation of traditional agriculture demand investments on new forms of production, for higher marginal benefits of agriculture, and investments on human capital. Schultz' positions served as starting point for development programs based on price incentives. For him, policies based on price incentives with investment on human capital and green revolution technology were the basics to trigger rural development.

Schultz's work received great acceptance among development scholars mostly because it provided a theoretical support for the theories of development, appeared during the fifties (i.e. Jorgenson, 1951; Lewis, 1954) very trendy during the sixties. After the sixties these theories loose force, but it remained the notion that peasants act rationally.

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<sup>16</sup> *Economic Theory and Agrarian Economics.*

<sup>17</sup> stressed by K. Boulding (1947, p. 438)

An important legacy of Schultz' work is the idea that peasants are rational. The theories of development loose force between the sixties and seventies, but the idea that peasants are rational consolidated. The defense of the rationality of peasants and that they respond to economic incentives, constitute the main outline of what is actually known as the *optimizing peasant*, a term used by other authors of the epoch<sup>18</sup>.

However, the image of the optimizing peasant not only expresses the idea that they are rational, i.e. that they act for maximizing their utility functions. It also encompasses a more questionable notion that they participate in the development process, and that they pursue for development. The image of the optimizing peasant encompasses the assertion that the peasants hold development as their central motive, i.e., that they pursue for growth in wealth. At the end, Schultz and other development economists<sup>19</sup> propose that peasants have to be regarded as farmers. This implies that they maximize some kind of utility function by maximizing profits. But, do they?

The economic literature of the sixties revolved around new theories<sup>20</sup> and models<sup>21</sup> of development based on the dual model of development of Lewis (1954) and other works like Jorgenson (1951)<sup>22</sup>. In the Lewis' model, *"the underdeveloped economy becomes developed at expense of a change from the agricultural sector in favor of the industrial sector"*<sup>23</sup>. The enhancement of the industrial sector demanded labor. A first inquiry was about the possibility of supplying this labor from agriculture. Two visions appeared. Some authors argued the existence of a labor surplus in the rural sector<sup>24</sup>. The supply of agricultural labor could be reduced without negative impacts on the agricultural output. The rural labor surplus appeared as a disguised unemployment<sup>25</sup> that could be assimilated by the industrial sector. A shift of labor to the industrial sector would bring about a raise of rural wages. In contrast, Schultz and Jorgenson (1951) considered that the marginal productivity of agricultural labor was close to zero and hence, the shift for industrialization would be only possible at expense of a reduction of agricultural labor<sup>26</sup>. Hence, development demanded the transformation of traditional agriculture to compensate the labor drawback.

If the process of development assumed a necessary shift of rural-urban labor, the raise in the productivity of agriculture could be induced by strategies that complement price incentives and technological transformation of the rural farm. Hence, the theories of

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<sup>18</sup> Lipton, 1968.

<sup>19</sup> Mellor, (1966), Mosher (1966).

<sup>20</sup> See Johnston (1970) and its references for a general survey on theories of development.

<sup>21</sup> Zarembka, 1969.

<sup>22</sup> Examples: Ranis and Fei, 1961; Enke, 1962; Ranis, 1962; Wellisz, 1968; Berry, 1970; Myint, 1965; Sen, 1966.

<sup>23</sup> Ranis and Fei, 1961, p. 534.

<sup>24</sup> Sen, 1966.

<sup>25</sup> Enke, 1962a; Paglin, 1965; Neher, 1966; Jorgenson, 1967; Wellisz, 1968; Guha, 1969; Berry, 1970; Sen, 1967; Berry and Soligo, 1968.

<sup>26</sup> See Sen, 1967 for a critique.

development demanded to test the responsiveness of peasants to price incentives. Some authors found that peasants respond to price incentives<sup>27</sup>, and some others that they don't<sup>28</sup>. Moreover some authors reported negative supply responses to price incentives<sup>29</sup>. Peasants were not only impassive to price incentives: they decreased the supply of food crops under high prices.

How to understand the negative supply response of peasants? A positive supply response informs the peasants' position for participating in markets to earn profits. But, what the peasants do with money if the markets for substituting the sold out food cannot be reached? The lack of responsiveness and the negative supply response reflects the fact that peasants are forced to store food from the inexistence of markets for substitutes. Peasants act optimally as consumers by preparing them in front of the scarcity to be produced by the raise of the demand<sup>30</sup>. What defines the motives of the peasant is not his desire for development, but the pervasiveness of the imperfection of markets.

The theories of development declined at the end of the sixties<sup>31,32</sup>. At the seventies, scholars turned their interest into the exploration of risk and rural institutions. At the end, the underlying interest on institutions relates to a more general concern on the influence that risk plays in peasants' decisions, in their performance, and in the arrangements set in rural communities to cope with risk and uncertainty. Institutions are economic responses to risk and uncertainty, as it synthesizes the theory of asymmetric information of Stiglitz. At the end of the 60's the failure of policies for rural development everywhere forced scholars to focus more carefully their attention on the economic structure of rural settings, with the help of the new theories of risk behavior appeared during the sixties.

The connection between risk and consumption in time, as the basis of the rationale of survivor behavior, was explored by Sandmo (1970) under the title "the effect of uncertainty on saving decisions". He develops a model of utility with two variables: the consumptions of today and tomorrow. Additionally, he considers two types of risk: the risk of income, which relates to the risk of falling under a certain minimal level of consumption; and the risk of capital investments, which relates to the risk of capital losses. The most important conclusion of Sandmo is that the increased uncertainty about future income decreases consumption by increasing savings. Additionally (p. 357) "an increase in the degree of risk makes the consumer less inclined to expose his resources to the possibility of loss". His contribution for survivor actors was that *increased uncertainty about future income decreases consumption* (p. 356): i.e. that consumption does not correlate

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<sup>27</sup> Bauer and Yamey, 1959; Falcon, 1964; Hogendorn, 1967.

<sup>28</sup> As for example Stern, 1962.

<sup>29</sup> Bardhan, K. (1970), Nowshirvani, (1971).

<sup>30</sup> As it is shown by Nowshirvani(1971).

<sup>31</sup> During the seventies few papers were concerned with topics of the sixties' fashion like dual economy and labor surplus. Dixit (1971) treated the short run equilibrium and shadow prices in the dual economy.

<sup>32</sup> The end of the debate about rural surplus seems due to Hamilton (1975) who showed that under risk aversion, the necessary condition for labor surplus, i.e. the constancy of the marginal rate of substitution between income and effort, doesn't hold.

with income. Block and Heineke (1972) extended the analysis of Sandmo to the uncertainty on savings.

The seventies witnessed a change of perspective in the analysis of rural households, forced by the failure of programs for development. There emerged the need for understanding the imperfection of rural markets, the apparent inefficiency of rural contracts, and the role of risk in peasants' decisions. From the seventies, different subjects related with risk in rural areas were studied and clarified at some extent. The exploration is being tackled under four lines: (i) rural institutions, (ii) the assessment of attitudes toward risk prevailing in rural households, (iii) the study of the determinants of risk behavior and (iv), the acknowledgement of the instances in which risk brings about inefficiencies. The research and the progression of theories related to risk, brought about a refined language<sup>33</sup> for taking into account the concerns of the household, and created a new picture for describing the rural actor: *the risk-coping peasant*. It stresses that peasants engage in coping with risk<sup>34</sup>.

The risk-coping peasant didn't emerge as counterpart of the optimizing peasant pursuing for development. It is taken as granted that development is the ulterior goal beyond risk coping. Many authors argue that investigations on risk coping are important for development, without noticing that risk sharing emerges as a strategy for surviving. Optimal risk sharing in rural areas can not lead to development, but to reduced vulnerability only. Yet, it is increasingly acknowledged that the so called risk coping strategies indeed are for smoothing consumption<sup>35</sup>.

## 1.2 The Risk-Coping Peasant

There is a rationale that shows peasant as risk coping actors. Under this rationale, all the economic decisions of peasants are ruled by their aversion toward risk. By coping with risk, peasants secure their income. The timid behavior of peasants is explained by the conditions imposed by a risky environment. Therefore, policies not only should account price incentives as Schultz and former development economists argued, but to help peasants to cope with risk.

The rationale operates as follows: Utility functions are concave, which suffices to guarantee the convexity of preferences. This convexity is a necessary condition for the consistency of the microeconomic theory. In turn, the concavity of utility functions creates the level of aversion to risk. If preferences are fixed and convex, the attitudes towards risk are fixed too. Peasants are willing to avoid risk and resign with lower but safer incomes. Risk aversion is the key concept to understand peasants' behavioral outcomes. Since risk is

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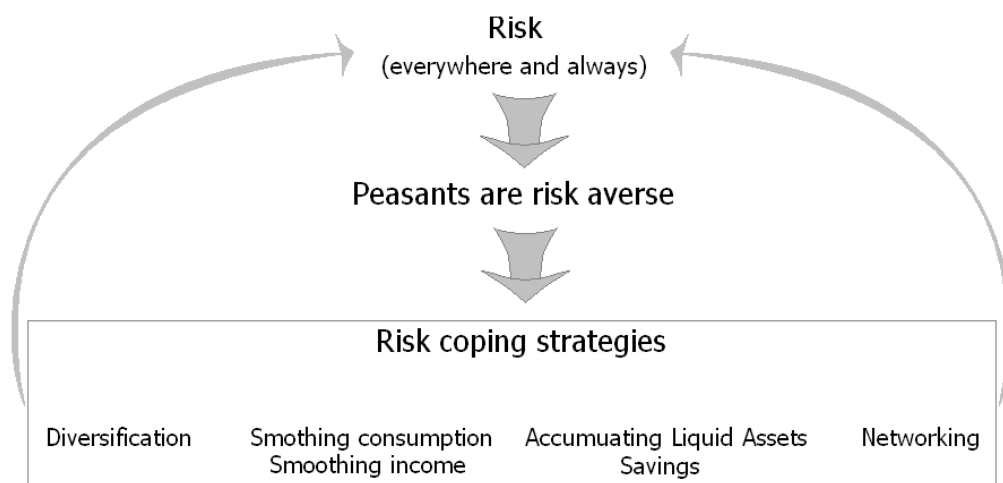
<sup>33</sup> Expressions like coping with risk and smoothing strategies are representative of the language created by the risk coping rationale.

<sup>34</sup> Ellis, 1998.

<sup>35</sup> Eswaran-Kotwal (1990), Nguyen (1998, p.19), Alderman and Paxson (1992, p.2), Fafchamps (1999, p.40, p. 71), Fafchamps and Kurosaki (1997), Rosenzweig and Wolpin (1995, p.228).

everywhere in peasants' economies, risk aversion explains all the sort of inefficient decisions acknowledged for peasants. Risk aversion explains why peasants allocate inefficiently their resources. Since risk is everywhere and always, peasants allocate their internal and communal resources to cope with risk. Peasants have developed complex strategies to cope with risk. They include smoothing income and consumption, saving money and liquid assets, storing food and building up networks. Coping with risk is the task tackled by peasants to succeed in an uncertain world.

The risk coping theory highlights the importance of risk in the economic decisions of the peasants. It provides a convincing framework to explain why peasants are preponderantly averse to risk. After the eighties, the exploration of risk in rural settings abandoned the search for a theory that integrates the utility model with actual risk behavior, and focused on all the strategies for coping with risk. There are two types of risk coping strategies (Alderman and Paxon, 1992): inter-temporal strategies encompassing saving money, accumulating liquid assets, storing food, smoothing consumption and income; and spatial or risk sharing strategies that include diversification of crops, networking, gifts, etc.



**Figure 1. The risk coping rationale**

That risk is everywhere and at all times, and risk aversion shapes peasants behavior, makes sensible to consider *coping with risk* the target of peasants' agenda. The pooling of risk takes different forms: by smoothing consumption, income or agricultural outputs; by diversifying crops and jobs; by making use of informal institutions for absorbing unexpected shocks; by saving money or accumulating and decreasing assets or food.

The assumption that peasants are for coping with risk creates two biases. First, it sets their problem in an elegant, abstract, but misleading framework. While consumption smoothing is the major goal for peasants, under the rationale it is one more strategy to cope with risk. It brings about one unsolved theoretical problem, known as the *consumption smoothing puzzle*: rural income is variable and uncertain, but consumption is consistently

—surprisingly— smooth. Evidently, the puzzle exists inasmuch as consumption smoothing is not a goal, but a means to cope with risk. The puzzle is a consequence of the risk coping rationale. The theory cannot hold the evident: for survivor households, smoothing consumption is their major goal.

The risk coping rationale brings about an agenda for research: to determine the drivers of risk behavior, to characterize risk attitudes among peasants, to determine the impacts of risk in the economic performance of rural areas, to understand the interlinking of the strategies for coping with risk and to establish the adequate policies for development.

As it has been shown above, we still lack of theories that properly conciliate the drivers of actual risk behavior with the utility model. Yet, it has not been an obstacle to characterize risk attitudes. A second bias of the risk coping rationale is the autarky granted to risk: the agenda for rural households is to cope with risk, but risk behavior doesn't depend on the economic context. The coarse idea of risk behavior depending on inner attitudes and wealth, and not on the particular situation of the households, leads also to a *risk puzzle*: while rural actors reveal aversion to risk in the majority of experiments in economics, in many of these cases they *behave* as risk neutral, even as risk lovers!

Nevertheless, once attitudes toward risk were characterized, the tasks in the agenda were to determine how risk affects the economic performance of the actor<sup>36</sup>, and to analyze the sort of strategies the peasant uses to mitigate risk and how they interlink<sup>37</sup>. To survive, peasants display strategies as the participation in the available markets, accumulation and lessening of assets, smoothing, diversification and communal arrangements for sharing risk. A way to understand these strategies is to classify their elements<sup>38</sup>. Regarding how these elements interlink, one step forward in the research agenda is to analyze a multinomial number of subsets among all feasible dispositions, from individual mechanisms, analyzing how two, three or more elements couple each other<sup>39</sup>.

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<sup>36</sup> Feder, 1980; Hazell, 1982; Newbery and Stiglitz, 1982; Chavas and Holt, 1996; Bontems and Thomas, 2000; Lamb, 2003.

<sup>37</sup> Wiens, 1977; Kimball, 1988; Rosenzweig, 1988; Eswaran and Kotwal, 1990; Alderman and Paxson, 1992; Coate and Ravallion, 1993; Rosenzweig and Wolpin, 1993; Townsend, 1994; Besley, 1995; Murdoch, 1995, 1999, 2002; Udry, 1995; Czukas et al., 1996; Ligon, 1997; Ravallion and Chaudhuri, 1997; Nguyen, 1998; Warning and Sadoulet, 1998; Dercon, 1998, 2000, 2004; Fafchamps, 1999; Rose, 1999; Christiaensen and Boisvert, 2000; Barret, Reardon and Webb, 2001; Kurosaki, 2001; Fafchamps and Lund, 2003; Lamb, 2003; Zimmerman and Carter, 2003.

<sup>38</sup> Alderman and Paxson, 1992; Besley, 1995; Nguyen, 1998; Fafchamps, 1999; Rose, 1999; Dercon, 2000.

<sup>39</sup> Examples of such investigations are: *Do the Poor Insure? A Synthesis of the Literature on Risk and Consumption Smoothing in Developing Countries* (Alderman and Paxson, 1992), *Nonfarm Income Diversification and Household Livelihood Strategies in rural Africa: Concepts, Dynamics, and Policy Implications* (Barret, Reardon and Webb, 2001), *Nonmarket Institutions for Credit and Risk Sharing in Low-Income Countries* (Besley, 1995), *Drought and Saving in West Africa: Are Livestock a Buffer Stock?* (Czukas et al., 1996), *Wealth, risk and activity choice: cattle in Western Tanzania* (Dercon, 1998), *Income risk, coping strategies and safety nets* (Dercon, 2000), *Implications of Credit Constraints for Risk Behavior in Less Developed Economies* (Eswaran and Kotwal, 1990), *Insurance Market Efficiency and Crop Choices in Pakistan*, (Fafchamps and Kurosaki, 1997), *Rural Poverty, Risk and Development*, (Fafchamps, 1999), *Risk-sharing*

However, the agenda seems to bear stagnation. It seems the expected knowledge to be gained from further comparisons will not provide a deeper understanding of peasants' microeconomics. Risk-aversion has made us aware suboptimal strategies displayed by peasants are the best options in imperfect economies. And now we know peasant communities display several sub-strategies to survive. How these sub-strategies complement and substitute each other deserves current attention, but afterward it seems we do not expect to find revealing matters. Meanwhile, we still assist to systematic failures in policy initiatives for rural development in third-world countries.

The difficulty that researchers find by assuming the risk coping rationale, is that the role of the smoothing of consumption, and hence the survivor nature of rural households is absconded. Even though the literature acknowledges the importance of consumption smoothing among the rest of strategies to cope with risk, the logic subordinates the consumption smoothing motive to the risk-coping motive.

### 1.3 The Achilles' heel of Development Economics

Economics bears an Achilles' heel similar to that borne by physics during the fourteenth and fifteenth centuries. At that time, powerful actors couldn't accept the Earth is not the center of the universe, and consequently that man is not the core motive for the existence of the universe. The work of Copernicus was declared heretic in 1543 and Galileo was legally accused by the holy tribunal of inquisition in 1615. The way for physics cleared as men were displaced as the central motive for the existence of everything else, and the separation between facts and beliefs triggered the development of the method and scope of physics. In spite of religious pressures, studies based on measures like that published in 1572 by Tycho Brae helped Kepler to unveil the mathematical relationships shaping the orbits of the Earth, which in turn served as pillar of the synthesis of Newton. The approach became a tradition and today, physics is a theory that searches for describing the observable world as it is (*how* and *how much* Galileo said), and physicists clearly recognize that the discussion of any *teleology*<sup>40</sup> of the natural phenomena belongs to philosophy.

Like physics after the middle age, the interference of beliefs fetters the development of scientific economics, and it is significantly responsible for the low incidence of economics in the solution of social problems like the poverty in rural areas. Yet, what in physics can be regarded as the birthing of a science, in economics may be presented as the suffering of a cyclical ill. In spite of efforts of great minds in economics to make a clear distinction

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*networks in rural Philippines (Fafchamps and Lund, 2003), Risk, financial markets, and human capital in developing country (Jacoby and Skoufias, 1997), Farmers' Cooperatives as Behavior Toward Risk (Kimball, 1988), Consumption Smoothing and the Structure of Risk and Time Preferences... (Kurosaki, 2001), Fertilizer Use, Risk, and Off-Farm Labor Markets in the Semi-Arid Tropics of India (Lamb, 2003), and more...*

<sup>40</sup> **Teleology.** "The theory that the cause and direction of changes in phenomena are determined by a previously existing plan or purpose, as opposed to mechanism wherein they are determined according to the laws of the natural sciences. All human actions (purposive human behavior) are teleological, i.e., they are activated by the purpose of the actor". As it is found in <http://www.mises.org/easier/T.asp>

between the descriptive and the normative parts of economics, it seems exist a tendency to mix up them, as if both were part of the same scientific language for describing issues as they are. Yet, the struggle has been concomitant with developments in economics, as it happened with the publication of *The Scope and Method of Political Economy* of John Neville Keynes in 1891 and the *Essays on Positive Economics* of Milton Friedman in 1953. However, as the relevant literature in development economics witnesses, it uses to happen that scholars tend to lose the notion of the difference between descriptive and normative issues, as if the ways out of social problems had definite and immovable trails, as if the ways out were part of the description, as if they were the only scientific feasible options for providing welfare.

The separation between facts and beliefs in economics is by no means attainable as it occurred in physics. The tendency to mix up normative and descriptive assertions roots in the nature of economic matters. The difficulty lies in the fact that men's behavior, the cornerstone of economics, is inherently featured by beliefs about both the final aims of this behavior (*a teleology*) and a sense of what is right (*a deontology*<sup>41</sup>). Devoid of teleological and deontological senses, the behavioral outcomes of men are like the mechanical actions of robots. The social progress of robots wouldn't present any interest for development economists, since these machines don't hold teleological values. The concern of disinterested economists for helping others to develop seems motivated, not by the consequences of scarcity on the physical existence of a being, but primarily by the effects of this scarcity on the realization of what these economists believe are the final causes of the needy. The outputs of economic behaviors can only be understood under a teleological perspective. The concern of economics lies on teleology, and any teleology in economics is a belief.

The setting of an economic problem holds by its own a sense of what will be the end to be pursued. The setting of a problem includes in the economist or the policy maker, a background, reference or perspective of the solution. Are development economists aware of the role of their beliefs in the *setting* of an economic problem? Development economists usually don't mull over the teleological and deontological nuances inherent to a setting. This disregard can be recognized in the majority of papers about rural development, from the easiness with which the argumentation passes from positive descriptions to normative assertions. It is possible that many economists think that the setting of problems like poverty in rural areas of underdeveloped countries are descriptions, as those descriptions of *how* and *how much* in natural sciences. But it isn't. The setting of a problem in development economics holds a descriptive part indeed. For setting a problem however, the description has to be presented in a perspective of something better. The economic problem exists insofar as the economic unit lacks some characteristics considered better or ideal. The problems like rural poverty or rural

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<sup>41</sup> **Deontology**. "An ethics based on acting according to duty or doing what is right, rather than on achieving virtue or on bringing about good consequences. It is too crude to make sharp divisions or to deny a place for more than one approach to ethics". As it is found in <http://www.filosofia.net/materiales/rec/glosaen.htm>



development exist under teleological and deontological perspectives only. The setting exists within a subjective framework of comparison.

The Achilles' heel of the current view of development economics as scientific approach to the economic problems of rural areas of Africa, Asia and Latin America, is not that the behavior of all actors is endowed with teleological and deontological senses. How could be presume that our economic ends, as consequences of our beliefs of our ultimate causes, are the same feasible and attainable ends for all economic actors? The Achilles' heel emerges from the inexistent awareness of development economists to separate between their own senses and the senses that a needy actor brings into the realization of its particular ends. For the actual solution of an economic problem like the poverty of rural areas in underdeveloped countries, the imposition of a foreign set of desirable ends has as consequence the search for unfeasible and unattainable pathways for these communities. Otherwise, how to explain the insistence on solutions that have not worked?

### ***1.3.1 The Distortion of Development in the Economic Analysis***

It is widely and implicitly held that the economic description of the rural households aims to elaborate a cogent idea of how they allocate their resources. Yet, it is rarely conceded that this description reflects to an extent an underlying vision held by the observer about the motives impelling the observed to act. For an unprejudiced observer aware of the interference of his beliefs about how men and institutions should be, it would appear sensible that the cognition of rural households' motives would be in evidence from their behavior and not be concluded or taken as granted from his own presumptions. If this scientific approach were followed by scholars interested in the enhancement of rural households, some important questions would arise naturally: Do peasants strive for raising their wealth as firms? Do they strive for subsistence? Do their struggles just serve to survive?

An unprejudiced scholar would naturally ask: what does make the peasants to decide among these options? Assuming that subsistence or survival are not desirable ends, if a policy is for transforming the motives and for inducing peasants into development paths, what does force them to follow one purpose different to development? What it happens if the external factors that could operate a change in the motives can not be enduringly transformed? In short, it seems sensible to take into account both peasants' motives for the right understanding of their behavior, and the relationship between the motives and the structure of rural economies in order to foresee feasible rather than desirable but unattainable, options.

However in the real life the treatment of the rural household in economics has been done without the convenient awareness of the ideological and religious presumptions inherent to any analyzer. Indeed the economic analysis of rural households has been based on the prefixed ideas of scholars about the motives of the rural units, ruled by ethic and moral precepts of western scholars. During the 20<sup>th</sup> century, development as the motive of rural

households has ruled the interpretation of peasants' economic behavior. The literature, both of the first years of the 20<sup>th</sup> century on the development of Africa and India, and that of the fifties and sixties, confirms that scholars opted for assigning development as the desirable motive of peasants' households. Even today, the majority of microeconomic research takes as granted that development is the economic motive of rural actors, everywhere.

The imposition of a normative, in which development or the perfection of markets is the target to be pursued, is responsible for the paradigm under which the analysis of peasants is currently done. The assumption of development plays as a framework in which peasants' behavior is judged. The idea that development is the basic goal of rural households made to believe that the economic behavior of peasants is irrational. The question of the rationality of the peasants was present among scholars and merchants of England interested in raising the productivity of Africans in cotton crops at the beginning of the 20<sup>th</sup> century. During the first half of the 20<sup>th</sup> century this discussion was nuanced by the conception of Chayanov and by the defense of the cultural patterns of semi-tribal societies, argued by economic anthropologists. The political concerns after the Second World War tipped the scale in favor of development. The Marshall plan for the industrialization of the undeveloped world demanded to consider peasants as well fitted and with similar mental endowments as anybody else. Anthropologists warned the imposition of a model that didn't fit with the structure, possibilities and expectations of the peasants. But development economists posed the subject in terms of the capabilities of the peasants for interacting and performing in a society ruled by markets. At some instances, the dispute was posed by development economists as the defense of the human nature of peasants, which gave them the moral victory. The discussion between anthropologists and development economists, posed in terms of the rationality of the actor, at the end was about the model of development.

## **2 The Survivor Peasant**

Huge evidence shows peasants concentrate on the provision of a safe and stable consumption, as they try to preserve its smoothness from any shock<sup>42</sup>. Peasants are survivor actors: they allocate their internal resources and deploy individual and communal strategies *for* securing a smooth horizon of consumption. Survival defines the actual economic motive of peasants. Peasants behave as survivor actors, not because they want, but because they face risks of hunger and starvation permanently.

### **2.1 Survivor Behavior**

The survivor behavior of peasants can be acknowledged in different instances: in the unproductive share of liquid assets at expense of capital assets, in the negative supply

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<sup>42</sup> Paxon, 1992; Rosenzweig and Wolpin 1993; Townsend, 1994; Murdoch, 1995; Udry, 1995; Jacoby and Skoufias, 1997; Ravillion and Chaudhuri, 1997; Nguyen 1998; Fafchamps and Kurosaki, 1997; Hoogeveen, 2001 ; Rosenzweig, 2001 ; Zimmerman and Carter, 2003; Fafchamps and Lund, 2003 ; Skoufias, 2007.

response when crop prices are high, in the “inefficient” allocation of crop inputs, with the preference for resistant but low profitable crops, and the steady contrast between the variability of the income and the smoothness of the consumption.

Keynes “believed that India was “... a country impoverished by a preference for liquidity which stifled the growth of real wealth” (Keynes, 1973, p.337)”<sup>43</sup>. Many studies have explored the role of liquid assets, as it has been already considered above. There is a good explanation for this preference: “Assets act like a buffer stock, protecting consumption against bad draws of income”<sup>44</sup>. Liquid assets are preferred because they can be converted in cash and food. Assets are valued according to its reliability for covering consumption holes. What is the optimal share between liquid and capital assets for survivor individuals?

Some authors found that peasants don’t respond to price incentives<sup>45</sup>. Even more, some authors reported negative supply responses to price incentives<sup>46</sup>; i.e. peasants were not only impassive to price incentives: they decreased the supply of food crops under high prices. The negative supply response indicates that the end pursued by the peasant as economic actor is to secure his consumption in time. If peasants value survival over growth, they would prefer to save future consumption rather than selling this production for increasing profits in a high price environment. By storing food, peasants keep in control the allocation of consumption.

Some investigations, nowadays obligated citations for the state of the art<sup>47</sup> on peasants’ microeconomics, showed the outstanding contrast between the variability of income and the smoothness of consumption in rural villages. At the nineties it was regarded as a puzzle<sup>48</sup>. The existence of the puzzle is given by the risk coping rationale: all the strategies of the rural actor can be seen as forms of diversification for coping with risk. In fact, the expression “smoothing consumption” was coined as one strategy for reducing risk<sup>49</sup>. A former vision was to consider that consumption correlates with income<sup>50</sup> and therefore the puzzle arises as the contrast between the steady smoothness of consumption in front of the variability of the income.

However, if the economic actor facing pervasive restrictions holds survival as his economic motive, the smoothness of his consumption emerges as his overall goal. There is no puzzle for survivor actors: all their strategies are for smoothing their consumption in regard of risk. Other strategies, like crop and job diversification, income smoothing and risk sharing,

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<sup>43</sup> Pointed out by Jalan and Ravallion, 1978, p.2.

<sup>44</sup> Deaton, 1991, p.1221.

<sup>45</sup> As for example Stern, 1962.

<sup>46</sup> Bardhan K., 1970; Nowshirvani, 1971.

<sup>47</sup> Townsend, 1994; Morduch, 1991; Paxson, 1992; Jacoby and Skoufias, 1997.

<sup>48</sup> i.e. Black 1990, but many others.

<sup>49</sup> Rosenzweig, 1988.

<sup>50</sup> Just & Pope, 1978; Antle, 1987, 1989; and from the PIH of Friedman.

are for smoothing consumption; or in other terms, for cancelling the risk of consumption holes.

The instances above mentioned have in common a connection with risk. Keynes didn't know the theories of risk, and for development economists of the sixties they were not sufficiently assimilated. Today, it is not necessary to argue that the preference for liquid assets, the negative supply response and the smoothing of consumption have in common a connection with risk. Risk is the underpinning of the survivor behavior. The analysis of risk in rural economies has been accomplished under the theory of absolute risk aversion of Friedman and Savage, and the theory of relative risk aversion of Arrows and Pratt. Both theories rest on the model of utility, in which the concavity of the utility function defines the attitudes toward risk. The theory asserts that the actual behavior toward risk comes out from inner attitudes and from the level of welfare.

The analyses, of risk and of the performance of rural households, have been made under these approaches. Moreover, peasants have been reasonably considered risk-averse<sup>51</sup>. The inefficiencies in the performance of rural households were found related with risk and risk aversion<sup>52</sup>. Additionally, it was found peasants deploy strategies to mitigate risk<sup>53</sup>. For instance, risk has been found related with preference for resistant but low profitable crops<sup>54</sup>. Murdoch, 1995, p. 110 reports:

*"I find evidence that households whose consumption levels are most vulnerable to income shocks devote a greater share of land to safer, traditional varieties of rice and castor than to riskier, high-yielding varieties (Murdoch, 1990)."*

Risk aversion has been found the ground for the low dosage of fertilizers<sup>55</sup>. Murdoch (p.109) comments:

*"Bliss and Stern (1982, ch. 8) ...find that fertilizer is a highly productive input in wheat cultivation, but the marginal product of fertilizers remain 3,5 times its price. Farmers could substantially raise expected profits by increasing applications of fertilizer, but by using less fertilizer, investment losses are reduced in bad times. The authors' calculations suggest that the foregone expected profits are most plausibly explained by high levels of risk and risk aversion".*

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<sup>51</sup> Dillon and Scandizzo, 1978; Binswanger 1980, 1981, 1982; Shahabuddin et al. 1986; Ansic and Keasey 1994; Wik and Holden 1998; Cummins 1999; Nielsen 2001; Binici et al. 2003; Miyata 2003.

<sup>52</sup> Moscardi and De Janvry 1977; Feder 1980; Hazell 1982; Newbery and Stiglitz 1982; Chavas and Holt 1996; Bontemps and Thomas 2000; Lamb 2003.

<sup>53</sup> Wiens 1977; Kimball 1988; Rosenzweig 1988; Eswaran and Kotwal 1990; Alderman and Paxson 1992; Coate and Ravallion 1993; Rosenzweig and Wolpin 1993; Townsend 1994; Besley 1995; Murdoch 1995, 1999, 2002; Udry 1995; Czukas et al. 1996; Ligon 1997; Ravallion and Chaudhuri 1997; Nguyen 1998; Warning and Sadoulet 1998; Dercon 1998, 2000, 2004; Fafchamps 1999; Rose 1999; Christiaensen and Boisvert 2000; Barret, Reardon and Webb 2001; Kurosaki 2001; Fafchamps and Lund 2003; Lamb 2003; Zimmerman and Carter 2003.

<sup>54</sup> Feder 1980; Zimmerman and Carter 2003.

<sup>55</sup> Moscardi and De Janvry 1977; Brink and McCarl 1978; Feder 1980; Babcock 1992; Murdoch 1995; Bontemps and Thomas 2000.

Other practices like the production below the optimal<sup>56</sup>, inefficient institutional arrangements<sup>57</sup>, and use of costly credit institutions<sup>58</sup> have been considered the outcome of risk-aversion. Risk aversion has been shown as the cornerstone for the backwardness of the peasantry. Dercon says:

*"if the high return activity is also more risky, then differences in risk aversion may explain differences in portfolio's across households. Poor households may then stay poor in the long run because they are risk averse".*

Risk and risk aversion became the key concepts used to explain the backwardness of peasants. It is straight to link the inefficiencies on assets, inputs, etc., with risk aversion. But the problem with the approaches of Friedman-Savage and Arrows Pratt based on the utility model is that they do not offer a further ground of the aversion toward risk: peasants behave averse to risk because they are averse to risk<sup>59</sup>. Risk behavior does not result from as a consequence of the demands of the moment pushing the actor to take or to avoid risk, but it emerges from psychological preferences.

In order to preserve the idea that risk behavior is given by preferences and not dictated by the demands of the situation, it has been considered the risky context influences the shaping of a given attitude: the inner aversion to risk has been explained by the physical conditions that likely have permanently forged such attitudes<sup>60</sup>. Under this view, once the actor becomes risk-averse or risk-lover, his behavior is predictable and fixed.

However, the explanation that peasants are inefficient because they are risk averse does not offer a comprehensive picture, because actual risk behavior does not come up from inner attitudes<sup>61</sup>. The theory of risk aversion depending on inner attitudes and welfare cannot grasp that other variables influence risk behavior. There lacks theoretical approaches that once and for all link the behavior toward risk with the smoothing of consumption, as some investigations it acknowledge. Fafchamps et al. (2003, p. 285) mention:

*"Regression results confirm that consumption smoothing is an important motivation for gifts and informal loans, but gifts and loans appear, by themselves, unable to efficiently share risk at the village level."*

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<sup>56</sup> Sandmo 1971.

<sup>57</sup> Rosenzweig 1988.

<sup>58</sup> Warning et Sadoulet 1998.

<sup>59</sup> For a related discussion see Binswanger 1982.

<sup>60</sup> See March 1996; Bearden 2001; Niv et. al 2002; Li 2006.

<sup>61</sup> See Masson 1972, Binswanger 1980, 1981, 1982; Eswaran et. al 1990; and Wärneryd 1996.

## 2.2 Risk Behavior

Actual risk behavior goes beyond the risk-averse actor of Arrows and Pratt<sup>62</sup>. Peasants do not act according to their inner preferences toward risk only. Different investigations, mostly carried out during the seventies and the eighties, show that other variables different to welfare influence actual risk behavior. Actual behavior toward risk is not ruled by inner attitudes exclusively, and the level of welfare explains risk behavior only partially:

*"...thus, even when all agents have identical risk preferences, differential risk behavior would still obtain if the agents have differential access to capital"*<sup>63</sup>.

The recognition that other variables different to inner attitudes and wealth influence risk behavior led scholars<sup>64</sup> to pose experimental approaches for grasping the factors different to inner attitudes that rule actual risk behavior beyond inner preferences:

*"The differential behavior towards risk... is explained by a set of socioeconomic variables that characterize peasant households in Bangladesh"*.<sup>65</sup>

These characteristics were found to be: human capital (age of head of the household, family size and level of schooling attained by the household head) and economic features: farm size (non-liquid), off-farm income (liquid), and the total value of the household's assets (which is a mixture of liquid assets and non-liquid assets). That other variables different to inner attitudes correlate with risk behavior pose challenges to the accepted version of Arrows-Pratt and Friedman. Even though all these investigations were carried out during the eighties, still there exists a lack of theoretical approaches that conciliates the utility model with the mentioned variables<sup>66</sup>.

## 3 Aversion to Uncertainty and the Function of Risk Behavior

This part presents an approach based on utility functions for modeling risk behavior of survivor individuals. It first introduces the unfolding of the utility model applied to the description of peasants and the concurrence with the safety first approach. After presenting the reasons that made the safety first to fail, and from the shortcomings of the usual approach based on utility functions, the concept of *aversion to uncertainty* and a new *function for describing risk behavior* of survivor actors are introduced.

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<sup>62</sup> Wärneryd, 1996.

<sup>63</sup> Eswaran and Kotwal (1990, p. 473)

<sup>64</sup> Principally Binswanger et al (1980,1981,1982) but others also.

<sup>65</sup> Shahabuddin et al. (1986, p. 122)

<sup>66</sup> See for instance Feinerman and Finkelshtein (1996).

### 3.1 Background

At the eighties the expected utility model became the art for modeling the economic actor<sup>67</sup>. During the same time the utility model gained room in the description of peasant household at the expense of the decline of the safety first rule. The theory of safety first failed to predict peasants' risk behavior. Wiens in 1977 posed some qualms but the first signal of the weakness of the safety first rule came from some studies developed during the seventies aimed to grasp the variables that correlate with actual risk behavior<sup>68</sup>. The final blow against the safety first theory seemed to come with a study of Binswanger in 1980 that rejected it as predictor of peasants' risk behavior.

The safety first constituted the sole theoretic approach available at this time attempting to explain peasants' behavior from some specific motives: avoiding disaster. The studies aimed to confirm the safety first theory of peasants' risk behavior were inconclusive, probably because the bet was to predict peasants' behavior from fixed rules. Additionally, it seems to have failed because the rule regards a random and not a permanent income or some types of enduring flows of consumption. As it has been argued, consumption does not correlate with income. The safety first was abandoned because it failed to predict peasants' behavior based on fixed rules. With its abandonment also disappeared the unique theoretic approach attempted to model peasants' economic behavior based on specific motives.

Yet, these studies that made the safety first to fail brought also evidence of the shortcomings of the utility model in its usual approach for describing actual risk behavior. As commented, the assumed rigidity between preferences and behavior brings about a discrepancy between preferences revealed in experiments and actual risk behavior. According to this view, inner preferences rule actual risk behavior. The aversion toward risk appears in the model in the geometric characteristics of well behaved functions of utility<sup>69</sup>. In concave utility functions, the high marginal utilities come up from low risky choices. Actors averse to risk scarify high-uncertain for low-certain payoffs. The dependence of risk behavior of inner preferences is captured by the function of Absolute Risk Aversion<sup>70</sup> ARA of Friedman Savage (1949) and the function of Relative Risk Aversion RRA<sup>71</sup> of Arrows and Pratt (1964). In both cases, these functions are expressions of the first and second derivatives of the utility, which in essence capture the geometric characteristics of the utility.

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<sup>67</sup> See Meyer (2002) for a review of the facts that made possible the utility model to prevail.

<sup>68</sup> Moscardi and De Janvry, 1977; Dillon and Scandizzo, 1978.

<sup>69</sup> with  $U' > 0$  and  $U'' \leq 0$

<sup>70</sup>  $ARA = r_u(u) = -\frac{u''(w)}{u'(w)}$

<sup>71</sup>  $RRA = wr_u(u) = -w \frac{u''(w)}{u'(w)}$

As discussed above, the modeling of relative risk behavior uses to be done on household's wealth. The function of RRA says that actors averse to risk avoid choices that could produce losses on assets. But wealth seems inappropriate for modeling an economic unit with insignificant assets. The idea of the function of RRA is that individuals are unwilling to expose their material wealth to losses, but the preference for liquid assets poses doubts on the capacity of wealth for tiding up the main concerns of peasants. Liquid are preferred to capital assets because they can be transformed almost directly in consumption<sup>72</sup>. While an individual can survive with exiguous levels of welfare as the peasants actually do, no one can even be an economic actor without a minimal level of consumption. While the provision of consumption is a daily obligation, the acquisition of assets is only possible after some capacity for accumulation has been attained. It seems natural to acquiesce that a survivor actor regards differently one risk associated to wealth than a risk associated to his consumption.

It should not surprise that the RRA function cannot grasp the span of behavioral responses to risk of rural households. The evidence shows that peasants behave differently to risk, depending on the security of their horizon of consumption: even though peasants are averse to uncertainty, they behave as risk neutral<sup>73</sup> or risk lovers<sup>74,75</sup>. While wealthier households are willing to take higher risks<sup>76</sup>, less wealthy peasants which –tight but safe– expect to cover their consumption needs are willing to avoid risks<sup>77</sup>; and peasants facing an insecure horizon of satisfactory level of consumption are willing to accept risky choices<sup>78</sup>. The last two cases are consistent with ecological literature. Caraco et al. (1980) observed that birds avoid risk when they expect to receive enough food, and gamble when they have not sufficient food to maintain a level of “energy budget”<sup>79</sup>.

With this background the modeling of the survivor actor is based upon two foundations: the acknowledged behavior of peasants that do not depend on inner attitudes exclusively, and the idea that peasants act optimally for smoothing their consumption. The modeling of survivor actors harmonizes with the traditional modeling summarized above. But in order to do that, it is necessary to differentiate risk from uncertainty, in order to explain coherently the discrepancies between attitudes toward risk revealed in experiments and the observed risk behavior.

### 3.2 Aversion to Uncertainty

A differentiation of uncertainty from risk is needed to account for inner attitudes toward risk separately from other factors shaping actual risk behavior. Within the economic

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<sup>72</sup> See for instance the reflection of Keynes cited in Ravallion et al (1997)

<sup>73</sup> Antle, 1987.

<sup>74</sup> Henrich and McElreath, 2002.

<sup>75</sup> Bauer and Yamey (1959, p. 805) accounted for the peasants' willingness to take risks.

<sup>76</sup> Eswaran and Kotwal, 1990; Dercon, 1998, p. 14, Rosenzweig and Binswanger

<sup>77</sup> Ogaki and Zhang (2001, p.515)

<sup>78</sup> Wärneryd (1996, p. 768) finds three equivalent types of real economic actors.

<sup>79</sup> A topic acknowledged under the “energy expected budget rule”.



literature it is common to find an undifferentiated use of uncertainty and risk as if they express the same thing. From the argumentation presented here, part of the failure on the treatment of risk behavior<sup>80</sup> rests on the lack of a clear distinction between uncertainty and risk. Historically, this distinction has been tackled under two perspectives. Both approaches give important but incomplete elements for the analysis of peasants' risk behavior. Yet, for building up a comprehensive approach of survivor actors, it is required a more clear distinction between risk and uncertainty and the consideration of their economic motives.

The first perspective of use in economics<sup>81</sup> due to Knight in 1921, points out that the difference between risk and uncertainty comes from the information available. For Knight, risk refers to the variability of random variables with known and uncertainty to variables with unknown distributions. Risk increases with variance. Real cases are intermediate situations between full information and full ignorance about the distribution of random variables. According to Knight, peasant's behavior would be different if he holds a view of the variability of the process than if he doesn't know anything about. Critics of Knight's approach argue that the ignorance about a stochastic process is replaced by beliefs, and that at the end uncertainty and risk are the same<sup>82</sup>.

But Knight seems partially right. To account for real risk behavior one might for instance consider the differences between the adoption of a new technology totally new for the peasant and crop decision based on more familiar weather cycles. The distinction between Knight's version and that arguing the existence of beliefs is not clear at two instances.

On one side, a new technology appears in principle a problem of lemons in which the buyer is willing to risk below the market price because of lack of information. But one thing is to hold previous experiences with similar technologies, and another thing is to ignore everything about. The difference between these two situations roots in the confidence on the beliefs the buyer may have about the product. There seems it exists a difference between knowledge and beliefs which gives support to Knight's approach.

On the other side and more crucial for survivor actors, the differences between the acquisition of a new technology and risky decisions about crops may hold additional differences from the point of view of the potential impacts of a failure. There are different risks involved for the peasant if the technology in question doesn't harm the survival of the actor as if it harms for instance the economic production or the consumption. For the last case, the survivor actor evidently will reject the technology.

If the case is that the risk involved in the acquisition of a new technology encompasses the value of the investment but nothing else, and the player would remain the same as before despite the loss, i.e., the bet does not impact the status quo of the household, then the

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<sup>80</sup> As Taylor and Zacharias (2002, p. 197) observe.

<sup>81</sup> Sinn (1989, p. 17).

<sup>82</sup> Hirshleifer et Riley (1992, p. 9-10).

regards on which the decision will be taken, will vary. It arises by the fact that what is harmed differs. If the hypothetical investment doesn't harm anything else, it is a surplus in practice. Evidently, the hypothetical case of an investment loss does not apply to poor actors of course, since their situation is plenty of scarcity. Peasants do not have in money or in the outcome of their labor a surplus, but even peasants have surpluses that they are in position to bet. For instance, under pervasive unemployment leisure time becomes a surplus. In general, an asset for which there is no market becomes a surplus. Time becomes a surplus because its opportunity cost is zero.

If the outcome of the random variable doesn't impact the status quo of the household, i.e. via the production, one would expect for one game the peasant to rely on inner attitudes: He holds some surplus to bet and whether he gambles or not or how much he gambles, it depends on his attitudes. If this is the case, one might admit that there is no risk involved at all, because the gamble doesn't harm anything more than the surplus betted. There is not risk since the opportunity cost of a surplus is zero. A peasant that bets his surplus time is not posing any risk to his status quo, i.e. his survival, because he is not losing any opportunity. This could be the case of experimental games in which peasants are invited to bet their time.

Whether the peasant is familiar with the stochastic process, whether he holds beliefs about this process or he doesn't know anything about it, if the gamble doesn't harm his survival and only a surplus is in play, there is no risk. If the game gambles a surplus, the observed behavior depends on inner attitudes. This attitude stands both for known and for unknown process. Consequently, it is more appropriate to call it *attitudes toward uncertainty* rather than attitudes toward risk. The bet of a surplus will reveal whether the player is averse, neutral or lover to uncertainty.

### 3.3 Risk and Survival

For the case of survivor actors like peasants, risk has to be considered under a different basis, closer to a second perspective about risk, usual in finance<sup>83</sup>. Risk distinguishes from uncertainty, not from the degree of familiarity of the peasants with the random variable in question as Knight asserted. The adoption of an unknown technology brings about a risk only if it harms something different to a surplus. To become a risk, an uncertain event holds a potential impact with a consequent cost. Risk is the exposure to an impact inflicting a cost. For actors without major surpluses, actual risk behavior doesn't follow from attitudes toward uncertainty but from risks harming real matters. As risk is the exposure to an injury, it is weighed up in terms of something else. This gives sense to the expression *risk of*. Yet, for analyzing peasants' decisions, expressions like risk of crop failure or risk of low prices, do not provide accurate insights. Though these expressions refer direct or indirectly to impacts, they do not make specific allusion to what is harmed.

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<sup>83</sup> Hey (1979), Stephens and Charnov (1982).

As it is acknowledged, peasants pursue for a smooth pattern of consumption and therefore, for survivor actors without major levels of wealth like peasants, the ultimate subject against which all risks are weighed up is their horizon of consumption. The expectations about the horizon of consumption constitute the baseline on which the survivor actor assesses risk and makes choices. Survivor actors compare the cost of a risk against the horizon of consumption, whose preservation constitutes their basic motive.

For survivor actors like peasants, risk can be defined as a potential cost produced by the impact of a random outcome that harms partial or totally a smooth horizon of the household's consumption, whether in form of eventual holes or as a level below a minimal acceptable consumption. Risk behavior would follow from inner attitudes, but additionally from the perception of the own ability to secure a smooth horizon of consumption. For a peasant, if the bet doesn't affect the smoothness of consumption he will gamble depending on his attitudes toward uncertainty. If he realizes that the gamble harms the smoothness of his consumption, he will not gamble; and if he realizes that his economic activities do not provide a minimal acceptable smoothness on the consumption for the crop cycle, he will gamble. For a comprehensive approach to economic behavior, the modeling of the economic actor should encompass both attitudes toward uncertainty and risk.

### 3.4 The Function of Risk Behavior

It is possible to capture in one simple function both the attitudes toward uncertainty and risk behavior motivated by survival concerns. The economic actor behaves consequently with risk, and not only from his inner attitudes toward risk. Let consider a function for the utility with  $U' > 0$ , whose attitudes toward uncertainty and willingness to take risk are shaped by an exponent  $\gamma_{\hat{F}}$ :

$$U_t = U(C_t; \gamma_{\hat{F}}) \quad (1)$$

Following the notation of Arrows and Pratt, the new function of *Relative Risk Behavior* is defined by:

$$RRB = -Arg(U) \frac{U_{cc}}{U_c} = 1 - \gamma_{\hat{F}} := 1 - \frac{\gamma_0}{2} \left( \frac{C_0 T}{\hat{F}} + \frac{\hat{F}}{C_0 T} \right) \quad (2),$$

where  $\gamma_0$  captures the attitudes toward uncertainty,  $C_0$  is the minimal consumption aspired to be daily secured,  $T$  is the horizon of time to be planned –the crop cycle–<sup>84</sup>, and  $\hat{F}$  is the *expected* outcome of economic activities providing a *permanent* Flow to consumption. The variable  $\hat{F}$  represents a permanent income for economies with perfect markets, and market and non market activities supplying consumption to the household for economies with imperfect markets and for households with market holes. For this case, market activities may include revenues from crop farming, off farm labor (covariant

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<sup>84</sup> Saha presents empirical evidence of "the seasonal dimension of the farmers' choice problem" (1994, p. 245)

with agriculture) and non farm labor (not covariant with agriculture). Non market activities include food crops and goods produced by the household for making up a living, ties and institutional networks. All these activities have different levels of uncertainty though in general, more profitable activities are more risky also.

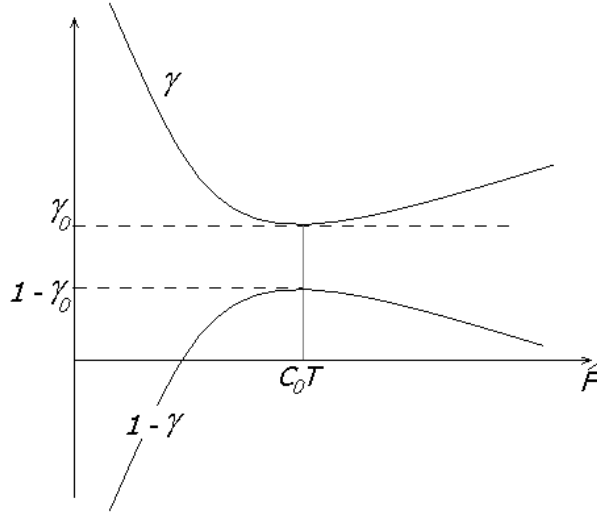


Figure 2. The function of risk behavior

From (2) it can be seen that, if the actor expects to cover tight but safe its horizon of consumption ( $C_0T = \hat{F}$ ), his behavior toward risk will rely on inner attitudes toward uncertainty as it holds in the original model of Arrows-Pratt ( $RRB = 1 - \gamma_0 = RRA$ ). If the actor expects his activities will not provide a sufficient flow of consumption ( $\hat{F} < C_0T$ ) he will gamble to survive; and finally, if the Flows providers of consumption produce more than sufficient ( $\hat{F} > C_0T$ ), he will be willing to gamble, according to his inner attitudes toward uncertainty and proportionally to the surplus  $\hat{F} - C_0T$ .

How the preferences and the expectations  $\hat{F}$  are related? One possibility is to consider that preferences depend on expectations and therefore the curvature of the utility function depends on the expectations, for example in a function

$$U = (C - C_0T)^{\frac{\gamma_0}{2} \left( \frac{\hat{F}}{C_0T} + \frac{C_0T}{\hat{F}} \right)} \quad (3).$$

For this function the curvature of the utility will be the most concave if the expected Flows  $\hat{F}$  equal the minimal acceptable consumption. If  $C_0T = \hat{F}$ , the factor  $\frac{1}{2} \left( \frac{\hat{F}}{C_0T} + \frac{C_0T}{\hat{F}} \right)$  becomes one, and the utility takes the form:

$$U(C; \gamma_0) = (C - C_0T)^{\gamma_0} \quad (3a)$$

In this case risk behavior will be dictated by inner preferences and the utility function (which measures the valuation of the consumption) will determine the actual risk behavior. For the remaining cases, in which the Flows are above or below the minimal acceptable consumption, the factor  $\frac{1}{2} \left( \frac{\hat{F}}{C_0 T} + \frac{C_0 T}{\hat{F}} \right)$  will be higher than one. The utility will tend to be linear or even convex, with more willingness to take risk if the Flows are below the minimal acceptable consumption  $C_0 T$ , as the upper graph of figure 2 shows.

This option for modeling actual risk behavior and utility can be justified with several arguments. Fixed preferences are demanded for comparative static analysis but there are no reasons to assume they have to stand fixed inter-temporally. It is not suggested that expectations change during the crop cycle. If this were the case, a model has probably no solution. It is sensible to assume that preferences change during the lifetime of the actor, and that these preferences may change depending on expectations. In fact, it has been reported the attitudes toward risk change<sup>85</sup>.

Yet, this alternative leads to confusions, because those actors whose expectations are below the minimal acceptable consumption have to gamble in risky options even though they could reveal aversion to uncertainty. The homologation between income and consumption in the utility function makes them to appear as if they aspire to consumptions beyond the minimal  $C_0 T$ , and in fact they would be fulfilled if they accomplish the minimal consumption  $C_0 T$ . This is the risk puzzle reported elsewhere, in which risk-averse peasants are willing to gamble in risky options. But in fact, they gamble in risky options just because with non-risky options they would be starved.

The utility values the consumption in terms of a satisfaction: for a given consumption  $C$ , there is a satisfaction  $U(C)$ . But, as mentioned, risk behavior depends on the expectations of the household about its ability to accomplish its target: there is no option to avoid this mandate. Therefore, the function that describes the satisfaction from the consumption cannot describe the mandates of risk. If the modeling aims to describe actual economic behavior, it has to account for the cases in which the actor is forced to gamble regarding the risks he faces, no matter his inner attitudes. For a coherent analysis that preserves the concept of utility as satisfaction and additionally accounts for actual risk behavior, it is necessary to decouple a function of utility related to consumption from a function that describes risk behavior in terms of expectations and risk.

### 3.5 The Model: Decoupling Behavior from Satisfaction

A second possibility is to decouple the valuation of the consumption expressed in one function of satisfaction  $U$  (equation 3a), from another function that shows the survivor behavior of the actor from his expectations. Consider the situation of a peasant forced to gamble in risky games because even though he is averse to uncertainty, if he rests on his

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<sup>85</sup> D'Amato, (2005, p.13); Brandt and Wang, (2003).





Combining (8.12) and (8.13) we obtain<sup>86</sup>:

$$L_f^* = \frac{\Delta}{(1-\sigma)\left(\frac{(1-\alpha)}{\alpha(2+r)}Q_l^c\right)^{1-\alpha} - Q_l^c} \quad (8.14)$$

$$I_1^* = \frac{\Delta}{(1-\sigma)\left(\frac{\alpha(2+r)}{(1-\alpha)}\right)^\alpha (Q_l^c)^{\alpha-1} - \frac{\alpha(2+r)}{(1-\alpha)}} \quad (8.15)$$

For the existence of the optimal values  $(L_f^*, I_1^*)$ , it is required that (8.14) and (8.15) be positive, i.e. that the denominators be positive. These conditions lead to:

$$Q_l^c < \left[ (1-\sigma)\left(\frac{\alpha(2+r)}{(1-\alpha)}\right)^{\alpha-1} \right]^{\frac{1}{\alpha}} \text{ and } Q_l^c < \left[ \left(\frac{(1-\alpha)}{\alpha(2+r)}\right)^{\alpha-1} (1-\sigma) \right]^{\frac{1}{\alpha}} \quad (8.16)$$

Equation 8.16 says that for a survivor actor, a risky option like  $Q^f$  is required only if the productivity of labor of the food crop is below certain threshold. The important aspect to remark for policies is that the survivor households can be enhanced by strengthening the productivity of food crops.

#### 4 A Normative for Survivor Actors

The assertion that peasants are survivor actors is not normative. It is not for defending a way of living as other approaches it suggests. Instead, it is to point up the actual ends of actors that do not have other chances beyond surviving. They abide as survivor actors not because they want, but just because they cannot get away. Further desirable goals like development have no sense for economic agents under risk of starvation. If survival were no longer the challenge that rural household must face, development would become a feasible goal. Peasants would embrace further goals as far as the risk of holes in their consumption vanishes. As these actors move away from the risk of starvation (as they foresee a clarified horizon in consumption), their interests would become similar with other actors: they would care about wealth; they would hold decreasing absolute risk aversion and increasing relative risk aversion.

The call for a normative for survivor actors is not against development. Instead, it is a call for a detailed consideration of the actual concerns of peasant households. The insistence on the survivor nature of peasants claims for a deserved awareness of *one stage* that policy makers should first attend in order to achieve reliable pathways for overcoming poverty. Before development, a rural household should be enhanced with reliable means

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<sup>86</sup> See the Appendix.



and resources for surviving in the best way, according to the strategies they use to smooth consumption.

#### **4.1 What Could Be**

Whether other desirable goals beyond a reliable survival are attainable, it depends on the feasibility to overcome the pervasive imperfection of markets. The perfection of markets is desirable and should be the solution, but its recurrent failure in rural areas proves it doesn't work as a rule. Somewhere and under specific conditions, the normative of the perfection of markets would help the rural households to stop being survivor actors. Yet, their isolation, lack of land, low demographic density, transaction costs, insecure rights on property and fragile infrastructure that characterize rural settings everywhere, make that policies aimed to improve markets do not reach the majority of rural households.

The enhancement of the ability of rural households to survive doesn't hold as condition the reinforcement of markets. The strengthening of the rural households does not have necessarily to do with the access to or the improvement of markets. Policies for the reinforcement of markets do not focus on the enhancement of the ability to survive. These abilities can be enhanced in different ways. One option is for example to diversify and raise the productivity of food crops, as the model above it suggests. Rural households would be helped if they were provided with reliable facilities for extending as far as possible the durability and the quality of stored food. Peasants would be better off if they were endowed with sufficient area plots for securing their self consumption, or with the provision of technologies like pumps for make safe water supply.

The canon of the perfection of markets impedes to visualize what is appropriate and attainable in rural settings. A normative for the survivor actor has to consider what is feasible beyond what is desirable. Such normative has to reformulate the guidelines of programs for rural development, from the traditional *what should be*, to a new *what could be*. A normative of what could be focuses on the provision and strengthening of means, resources and local institutions for securing the horizon of consumption. It appeals to market and non-market mechanisms for enhancing rural communities to become autonomous in the provision of food and other livelihoods for making up a decent life.

#### **4.2 Between Livelihoods and the Achilles' heel of Development Economics**

Current normative approaches like food security and rural livelihoods, call for attending rural people's real concerns and for a better understanding of their strategies. The movement of food security claims for policies to support actual concerns about food. Other programs focus on subsidies for consumption. The livelihood approach calls for a better appraisals of rural livelihoods. It is also evident the lack theoretical approaches for describing the situation of risk averse actors forced to gamble in risky choices for securing a living, in spite of the growing implementation of policies subsidizing consumption: there is a gap between microeconomic descriptions tiding up rural concerns and normative approaches of food security, rural livelihoods and policies subsidizing consumption. These

normative approaches would gain more influence in policy trends if they were supported by descriptive models. It is also demanded a framework that accounts for peasants as adaptive actors who take advantage of all the existing opportunities, not only those given from agriculture<sup>87</sup>.

It is possible to bring into concurrent lines formal descriptions, actual features and sensible claims about food security and rural livelihoods. A superior approach has to get rid of several assumptions at each side. For the movement of rural livelihoods, assets are not productive inputs only but outputs themselves. Assets make up a way of living. For them, policies should weigh rural motives and values. Yet, it is not clear to what extent those assets and livelihood strategies are goals themselves. From an economic perspective, the idea that assets hold values that prevail over the worth of their function is indefensible. The earliest notion of non rational peasants and later *subsistence* approaches, both share as fetter a belief about substantial differences between peasants and other economic actors, which the livelihood approach would seem to replicate. It is essential to ask if the perception of rural livelihoods as goals and values comes from real motives or from the appearance given by a steady state without chances to develop.

On the other side, it should be admitted that the model of utility based on preferences does not model actual risk behavior. If the theory were perfect, its immovability would be valid as precondition. But it isn't. The usual model doesn't grasp the behavioral outcomes ruled by the expectations of the household. It should not be forgotten that economics is for describing human behavior, and not for human beings to behave according to the theory. If the prevailing vision in which actual behavior should emerge from preferences must be taken as granted, the convergence of approaches is unlikely, since the connection between motives and behavior is only apparent.

Yet, the search for new descriptions is not for supporting a normative. It is just motivated by the inability of the prevailing model to identify peasants' goals and drivers, and for describing their actions with precision.

### 4.3 The Variables of Policies for Enhancing Survivor Actors

The economy of survivor actors rely on market and non market activities<sup>88</sup>. The improvement of the ability of peasants for surviving in the best possible way can be made by reinforcing options based on markets. However, this ability can be reinforced by improving the capacity for allocating temporal and spatially their consumption. The research of the nineties and of this century on risk sharing shows that, more than an allocation of internal resources, peasants deploy temporal and spatial strategies for

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<sup>87</sup> Agriculture is anymore the main source of income and consumption in rural areas Several researches report comparable shares of income between non farm and farm activities: 47% (Berdegue et. al. 2001); 50% (Deininger and Olinto, 2001); among others.

<sup>88</sup> Some studies like Fafchamps (1998) place risk sharing as intermediate between market and non-market mechanisms.

securing a smooth consumption<sup>8990</sup>. Peasants deploy *consumption smoothing strategies* according to their *positions*. The position of each household refers to the effective access of the household to the economic offer of the context. This position is defined by the endowments and skills.

The strategies for smoothing consumption are dependant variables of the context and the position (the independent variables), and are endogenous to the household. More than reallocating their internal resources in response to external changes, rural families reconfigure their share of strategies. This is what scholars study in the economics of risk sharing. Indeed all the normative literature related with risk-sharing belongs to a normative for the survivor peasant. Policies may force peasants to rely on riskier, more costly and non-reliable strategies, or they can induce less demanding plans. Policies should provoke the adoption of reliable strategies with lower labor costs.

Strategies are not just decisions, but complete plans of actions that account for all possible contingencies. The rural world is full of contingencies and the strategies evolved by peasantry are refined schemes aimed to reduce the impact of uncertainty and to control the expected outputs. The strategies are: smoothing, diversifying, accumulating and risk-sharing. *Smoothing* strategies work on income and crop outputs and map into consumption smoothing directly. Remittances and non-farm work are best smoothing options because do not depend on weather. Since the demand for off-farm work correlates with weather, its contribution to smoothing is relative. Peasants smooth crop outputs with resistant varieties and increased labor. *Diversifying* strategies fill the holes uncovered by smoothing strategies, whether with risky and food crops, or with off-farm and non-farm work. It requires specialization in crops and a good position to access several job markets. Diversifying demands more labor and planning, and therefore becomes a more costly strategy. *Accumulating* is the preferred strategy for pastoralist peasants. In African savannas, wealthiest peasants rely on cattle while the poorest do on off-farm, non-farm work, and food crops. Accumulation is carried out on assets, livestock, money or food. Rural Andean homes are built with minimal ventilation, because peasants store food inside. *Risk-sharing* is given by social integration through family ties, affiliations to informal networks, etc. Networking is useful for unexpected shocks that cannot be absorbed by income and assets stocks. It is the less efficient strategy: peasants cannot survive relying on networks since the level of support is limited. Smoothing and diversifying strategies produce income, and food storing, savings or accumulating assets demand facilities, i.e. accumulating and networking are complementary to strategies producing income.

#### 4.4 How Policies Optimize Survivor Behavior

Really enhancing policies have to care for all economic, physical and temporal aspects of surviving. Policies for agriculture help to solve income problems, but ignore temporal

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<sup>89</sup> Alderman and Paxson (1992)

<sup>90</sup> Fafchamps and Lund (2003) can be considered the state of the art in the economics of risk sharing.

issues: storing facilities and markets for accumulation. Peasants demand policies, conceived as *sets of measures*, responsible for income (no matter the source) and accumulation, and for assimilating shocks. There are no recipes for enhancing the ability of rural families to survive; more functional is to identify the set of independent and dependent variables for policies, as well as its expected outcomes.

With dissimilar impacts on the distribution of benefits, policies perform on the sets of independent variables: the *external context* and the *households' position*. Policies for widening or reinforcing the context aim to benefit the whole community, but the share of gains cannot be controlled and best positioned families benefit more. Policies for improving households' positions control the share. For distributed impacts, policies might start with (less expensive) programs for improving households' positions, and follow with (more complex) measures for widening or reinforcing the context. If the context grows and households are able to perform fully on it, peasants would increase their chances to smooth consumption. Yet, growing the context in all directions or positioning all households for using the whole context is not feasible. It might be considered to create markets, though reinforcing those already existing is easier. In addition, not all measures induce the desired outputs. Existing livelihoods and funds for policies are scarce. Hence, policy makers need to understand how changes on independent variables affect the dependent ones, in order to know which measures yield more.

An optimal share of strategies accounts not only for options producing income, but for strengthening the capacity for storing and saving, whether saving money or in form of liquid assets. Peasants accumulate more if they have better facilities for storing or access to markets for assets. Markets for credit usually fail in rural areas due to transaction costs, but i.e. markets for livestock are more resilient. Creating markets for assets demand reliable access to some resources, i.e. land, feed or markets for complementary goods. Markets can be reinforced in many ways: with infrastructure for transportation, market places, stores, specialization of households for improving labor supply, etc. Villages relying on diversifying strategies or lacking markets for groceries should be complemented with accumulating facilities. Relatively isolated households can be enhanced with low and stable prices for livestock inputs, new food crops, programs for vegetable gardens, silos, etc. Impacts of resource scarcity can be lessened with technology, i.e. efficient cook stoves for areas bearing biomass shortage, water pumps, etc.

### Appendix: The Model.

The Lagrangian can be written as:

$$\begin{aligned}
 Z = & (C - C_0)^{\gamma_f} + \lambda \left( C + I_1(2+r) - Q_l^c(L_c + L_f) - S_0 \right) \\
 & + \beta \left( C + I_1(2+r) - Q_l^c L_c - S_0 - (1-\sigma)Q^f(I_1, L_f) \right) \\
 & + \theta (L - L_c - L_f)
 \end{aligned} \tag{7}$$

Kuhn-Tucker conditions

$$\frac{\partial Z}{\partial C} = \gamma_{\hat{F}}(C - C_0)^{\gamma_{\hat{F}}-1} + \lambda + \beta \leq 0; C \geq C_0; (C - C_0)(\gamma_{\hat{F}}(C - C_0)^{\gamma_{\hat{F}}-1} + \lambda + \beta) = 0 \quad (8.1)$$

$$\begin{aligned} \frac{\partial Z}{\partial I_1} &= \lambda(2+r) + \beta(2+r) - \beta(1-\sigma)Q_{I_1}^f(I_1, L_f) \leq 0; \quad S_0 \geq I_1; \\ (S_0 - I_1)(\lambda(2+r) + \beta(2+r) - \beta(1-\sigma)Q_{I_1}^f(I_1, L_f)) &= 0 \end{aligned} \quad (8.2)$$

$$\frac{\partial Z}{\partial L_c} = -\lambda Q_{I_1}^c - \beta Q_{I_1}^c - \theta \leq 0; L > L_c; -\lambda Q_{I_1}^c - \beta Q_{I_1}^c - \theta = 0 \quad (8.3)$$

$$\begin{aligned} \frac{\partial Z}{\partial L_f} &= -\lambda Q_{I_1}^c - \beta(1-\sigma)Q_{I_1}^f - \theta \leq 0; \quad L \geq L_f; \\ (L - L_f)(-\lambda Q_{I_1}^c - \beta(1-\sigma)Q_{I_1}^f - \theta) &= 0 \end{aligned} \quad (8.4)$$

$$\begin{aligned} \frac{\partial Z}{\partial \lambda} &= C + I_1(2+r) - Q_{I_1}^c(L_c + L_f) - S_0 > 0; \lambda \geq 0; \\ \lambda(C + I_1(2+r) - Q_{I_1}^c(L_c + L_f) - S_0) &= 0 \end{aligned} \quad (8.5)$$

$$\begin{aligned} \frac{\partial Z}{\partial \beta} &= C + I_1(2+r) - Q_{I_1}^c L_c - S_0 - (1-\sigma)Q^f(I_1, L_f) = 0; \beta \geq 0; \\ \beta(C + I_1(2+r) - Q_{I_1}^c L_c - S_0 - (1-\sigma)Q^f(I_1, L_f)) &= 0 \end{aligned} \quad (8.6)$$

$$\frac{\partial Z}{\partial \theta} = L - L_c - L_f = 0; \quad \theta \geq 0; \quad \theta(L - L_c - L_f) = 0 \quad (8.7)$$

The inequality in (8.5) makes  $\lambda = 0$ . From (8.1) there are two options:  $C = C_0$  or  $\beta = -\gamma_{\hat{F}}(C - C_0)^{\gamma_{\hat{F}}-1}$ . Additionally, given that  $L > L_c$  the equation (8.3) becomes  $\theta = -\beta Q_{I_1}^c$ .

The set of equations transform into:

$$(C - C_0)(\gamma_{\hat{F}}(C - C_0)^{\gamma_{\hat{F}}-1} + \beta) = 0 \quad (8.1)$$

$$(S_0 - I_1)\beta((2+r) - (1-\sigma)Q_{I_1}^f(I_1, L_f)) = 0 \quad (8.2)$$

$$-\beta Q_{I_1}^c - \theta = 0 \quad (8.3)$$

$$(L - L_f)(-\beta(1-\sigma)Q_{I_1}^f(I_1, L_f) - \theta) = 0 \quad (8.4)$$

$$C + I_1(2+r) - Q_{I_1}^c(L_c + L_f) - S_0 = \Delta \quad (8.5)$$

$$C + I_1(2+r) - Q_{I_1}^c L_c - S_0 - (1-\sigma)Q^f(I_1, L_f) = 0 \quad (8.6)$$

$$L = L_c + L_f \quad (8.7)$$

Additionally, from equation (5) it is known that:

$$Q_{I_1}^f = (1 - \alpha) L_f^\alpha I_1^{1-\alpha} = \frac{(1 - \alpha)}{I_1} Q^f \quad (8.8)$$

$$Q_l^f = \alpha L_f^{\alpha-1} I_1^{1-\alpha} = \frac{\alpha}{L_f} Q^f \quad (8.9)$$

Let assume that an interior solution exists, i.e.  $C > C_0$ ,  $S_0 > I_1$  and  $L > L_f$ . From (8.1):  $\beta \neq 0$ . From (8.2) and combining with (8.8):

$$Q_{I_1}^f(I_1, L_f) = (1 - \alpha) L_f^\alpha I_1^{1-\alpha} = \frac{(2 + r)}{(1 - \sigma)} \quad (8.10)$$

Additionally, combining (8.3) and (8.4), and then replacing (8.9) it is obtained:

$$\alpha L_f^{\alpha-1} I_1^{1-\alpha} = \frac{Q_l^c}{(1 - \sigma)} \quad (8.11)$$

Combining (8.10) and (8.11) the relationship between  $L_f^*$  and  $I_1^*$  is obtained:

$$I_1^* = \frac{1 - \alpha}{\alpha} \frac{Q_l^c}{2 + r} L_f^* \quad (8.12)$$

If we rest (8.6) from (8.5), taking into account (8.7), we obtain the expression:

$$\Delta + Q_l^c L_f - (1 - \sigma) I_1^{*1-\alpha} L_f^{*\alpha} = 0 \quad (8.13)$$

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