

# **Economic Insecurity, Individual Behavior and Social Policy**

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## *Abstract*

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This paper is an attempt to return the discussion on social insurance and protection to its economic foundations. We use a framework proposed by Ehrlich and Becker (1972) in the economics of insurance literature to first clarify the concepts and then take a “comprehensive” approach to insurance and protection. Our approach starts with the choice problem of a representative individual facing risk, who chooses optimal levels of market insurance, self-insurance and self-protection. Market insurance and self-insurance transfer incomes between good states and bad (without changing the probabilities) while self-protection lowers the probability of the bad state (without affecting any transfers across states). Prices and costs are crucial in determining the optimal allocation. We illustrate the usefulness of the framework by considering the example of unemployment insurance (as market insurance), precautionary saving (as self-insurance) and investments in human capital (as self-protection). Government action is warranted from an efficiency point of view only if markets for some instruments are missing, or if there are distortions that prevent individuals from achieving their optimal insurance and protection levels. The framework yields some novel insights and can explain relationships between trends in economic insecurity and the demand for more insurance in developing countries. While not addressing redistribution concerns, we believe that the simplicity and comprehensiveness of this framework could help prioritize government actions and thus assist in the design of better country-specific social insurance and social protection strategies.

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# 1. Motivation

Regional economic crises in the 1990s have left in their wake a world worried about economic insecurity, and governments puzzled about how best to help people manage the risks they confront. Holzmann and Jorgensen (1999) classify these concerns regarding risk management as “social protection” policies. But attempts to be all-encompassing in the absence of theoretical guardrails have resulted in confusion about the nature of this problem and the role of government policy. The approach has yielded checklists of potentially helpful policy measures but little guidance on when and where these policies will improve outcomes.

Ideally, for tackling a problem as complex as this, policymakers should have unambiguous definitions of the main concepts, a tight framework that links them, and clear rules for identifying the role for and appropriate design of public policy. Even a casual observer would point out that the state of thinking on these matters in developing country governments and in development institutions such as the World Bank is far from ideal. This paper makes an attempt to start remedying this.

A systematic approach to social policy formulation would begin by understanding how *individuals* or families behave when confronted with risk. Fundamentally, there are two actions that an individual or family can take: *insure*, viz., transfer incomes from good to bad states, and *self-protect*, viz., lower the likelihood that the bad state occurs. Neither is costless. A comprehensive framework would allow for all types of insurance and self-protection decisions. Any constraints to individuals taking these actions effectively would be of social policy interest, and the problem then becomes one of deciding whether and how governments can help remove these constraints.

There are several advantages of an organized and comprehensive approach to this problem. First, the analysis would have strong micro-foundations, i.e., use tested principles of welfare maximization under constraints. Second, the analysis would place

individuals and households, not government, at the core of the problem. Third; the rationale for government action would not be *ad hoc* but would be based on the absence of well-functioning markets. Fourth, the relationships between instruments to deal with risk would not be arbitrary but would depend on budgets and prices. Finally, the analysis would yield not just a menu of policies but also some rules to prioritize among them.

In applying such an approach to the problem of “social protection”, we have resisted the temptation to be original. We instead draw on the seminal work by Ehrlich and Becker (1972), which provides an elegant treatment of an individual’s optimal insurance decisions when faced with the options of market insurance, self-insurance and self protection (see section 2 for definitions). We illustrate how a theory of individual insurance and self-protection can be extended to identify “market-augmenting” roles of government (i.e., over- and under-involvement of government, in the sense of Olson, 2000). Under one rather strict interpretation, the public policy analogs of the individual’s insurance and self-protection problem are *social insurance* (government actions to augment market insurance) and *social protection* (government actions to augment self-protection). Of course, there can be other interpretations. But we believe that a disciplined approach that builds the case for social policy from individual decision-making can lead to more meaningful concepts and tighter definitions.

The framework used here allows us to address problems that preoccupy policymakers around the world, viz., changes in the demand for insurance due to globalization, economic growth, or increased uncertainty, and the likely effects of social safety nets installed in response to these changes. The approach is versatile enough to distinguish between the policy implications of economy-wide and idiosyncratic shocks, between “catastrophic” (large and rare) and “noncatastrophic” (small and frequent) losses, and between “good” and “bad” instruments for insurance against these shocks. The approach yields insights that can—with some additional work—lead to rigorous strategy formulation at the country level.

At the outset, we should warn readers that this paper deals only with risk-related decisions for the individual and their possible policy implications. Our view is that the theoretical insights in the existing economics literature on risk and insurance have been insufficiently exploited by policy related work on the subject of social insurance. We attempt to remedy this. But our preoccupation here is solely on risk, and the rationale for policy are solely efficiency-related. There is little or no discussion of issues related purely to redistribution or structural poverty; we believe the analysis can be extended to address these problems, but at considerable cost in terms of practicality and simplicity.

The practicality of the analytical framework is illustrated by moving from a largely theoretical summary of the model in the next section, to its use in identifying the relative advantages of existing social programs in countries such as Argentina, Brazil, and Mexico in the concluding section. In between, the concepts formalized by Ehrlich and Becker (1972) are used to understand individual choice and social policy in a world with unemployment insurance, imperfect savings and financial markets, and human capital accumulation under real-world constraints in section 3.

## 2. The Theory

In addition to clarifying basic concepts, a good theoretical framework for risk management would have three attributes: First, it should be comprehensive, in that it should cover all the major instruments for managing risk and be sensitive to the relationships between these instruments (substitution and complementarity). Second, it should use well-established microeconomic foundations to structure the approach to address the problem of risk. Generally this means that the problem of the individual—not the government—takes center-stage. The problem of government has its roots in individual expected utility maximization: only the absence or failure of markets for insurance and protection against risk provides cause for governments to intervene. Third, it should afford clear insights that help the design of policy regarding social insurance and social protection. That is, working through the structured framework should formalize existing thinking about the subject of risk but—even more important—yield insights additional to those that we began with.

We propose here that the framework developed by Ehrlich and Becker in their seminal 1972 article in the *Journal of Political Economy* has all of these attributes..<sup>1</sup> There is little, therefore, that is novel in this paper. The innovation lies largely in extending Ehrlich and Becker’s insights to social policy though, even in doing this, we found many helpful hints in their paper. Our contribution may thus lie simply in returning the discussion on social insurance and protection to its economic foundations.

### 2a. The Ehrlich-Becker Framework

Ehrlich and Becker (1972) state the “comprehensive insurance” problem of the individual as one of determining the levels of expenditure on market insurance, self-insurance and

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<sup>1</sup> While Ehrlich and Becker (1972) has influenced the subsequent work on insurance, much of what has followed has been on the subject of *moral hazard*, see, e.g., Marshall (1976), Hirschleifer and Riley (1979) and Coate (1995). Their contribution of the concept of “comprehensive insurance” consisting of market insurance, self-insurance and self-protection which lends itself naturally to the analysis of social policy has, to our knowledge, remained largely unexploited.

self-protection. The premise is that individuals can either insure against loss, or lower the probability of the loss. Both involve expenditures. Market insurance can be purchased at price  $\pi$ , if available. Self-insurance differs from market insurance in that there is no market for it and therefore no explicit price; however, a “shadow price” can be imputed from the costs incurred by the individual in self-insuring. A critical difference between market insurance and self-insurance is that the former uses pooling to spread risk across individuals, while the latter does not. Both market and self-insurance, it bears repetition, serve only to transfer income from the good to the bad state of the world and do not reduce the *likelihood* that these transfers will be required. Self-protection, on the other hand, only reduces the *probability* of the bad state of the world, doing nothing to the size of the loss in case it occurs anyway.

In this simplified world, the representative agent smoothes consumption over the good and bad states of the world.<sup>2</sup> “Missing markets” are easily accommodated in the model: the absence of market insurance results in the individual smoothing consumption using only self-insurance and self-protection. And when this market is introduced, the effects on self-insurance (it will fall) and self-protection (it may or may not fall, depending on the nature of market insurance) are transparent immediately.

In a world where both market insurance and self-insurance opportunities are present, the individual sees them as substitutes. The provision of market insurance at or near actuarially fair prices would reduce *self-insurance*. But Ehrlich and Becker also find that—contrary to popular arguments involving “moral hazard”—market insurance does not *always* crowd out *self-protection*. In other words, it may not always be the case that individuals reduce their expenditures on self-protection in response to greater insurance coverage through the market. They argue this is because in one aspect market insurance and self-protection are complements—increased self-protection increases the marginal product of market insurance. That is, if self-protection or a lowered probability of the

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<sup>2</sup> It is worth clarifying the concept of “state” here. State is *ex ante* and the states of the world are mutually exclusive—thus in our two state world, either the good state occurs, or the bad, but not both. The analysis can be generalized to more than two states of the world. Note also that any treatment of redistribution or poverty would not be possible with only one type (or representative) agent.

bad state is rewarded by market insurance, market insurance and self-protection can indeed become complements, and moral hazard is eliminated.<sup>3</sup>

## 2b. Optimality Conditions: The Role of Prices

To keep matters simple, there are only two states of the world—bad (state 0) and good (state 1). The bad state occurs with probability  $p$ , and so the good state with probability  $1-p$ . The endowed incomes of the individual in the two states are, respectively,  $I_0^e$  and  $I_1^e$ . The individual incurs expenditures on market insurance ( $s$ ), self-insurance ( $c$ ) and/or self-protection ( $r$ ) to smooth income over states. Market insurance is available at market price  $\pi$ . Each dollar spent on self-insurance reduces the loss in the bad state according to a “loss function”  $L^e(\cdot)$ . Each dollar allocated to self-protection lowers the probability of the bad state according to the function  $p(r)$ . Just as a lower  $\pi$  allows the individual to buy more market insurance with a given budget, increased marginal productivity of self-insurance and self-protection allows the individual to get more at a given cost.

**Table 1: Main Symbols and Definitions**

Symbol	Definition	Main Properties
$U(\cdot)$	Utility function	$U' > 0$ ; $U'' < 0$
$p$ ( $p^e$ , $r$ )	Probability of bad state	Expenditures on self-protection lower the probability of bad state, i.e. $p'(r) < 0$
$1-p$	Probability of good state	
$p^e$	Endowed probability of bad state	Changes in $p^e$ are exogenous
$I_0^e$	Endowed income in the bad state	
$I_1^e$	Endowed income in good state	
$L^e$	Endowed loss	$= I_1^e - I_0^e$
$s$	Expenditures on market insurance	Decision variable if market exists
$c$	Expenditures on self-insurance	Decision variable
$r$	Expenditures on self-protection	Decision variable
$\pi$	Market price of (market) insurance	Actuarially fair if $= p/(1-p)$
$\pi s$	Expenditure on market insurance	
$L(L^e, c)$	Loss function associated with self-insurance	Expenditures on self-insurance ( $c$ ) lower the “loss” in the bad state, i.e. $L'(c) \leq 0$
$\lambda$	Loading factor for insurance	$\lambda'(p) > 0$ in case of market insurance, $\lambda'(p) < 0$ in case of self-insurance

<sup>3</sup> As an example, the installation of lightning rods in the house reduces the probability of damage from a lightning strike and therefore lowers the price of market insurance for the individual.



Table 1 provides the definitions of all the variables use in the model, strictly following the terminology adopted by Ehrlich and Becker (1972).

In the model with “comprehensive” insurance—i.e., when market insurance, self-insurance and self-protection are all available—the individual chooses  $s$ ,  $c$ , and  $r$  to maximize the expected utility function before the state of the world is revealed (i.e., the framework is *ex ante*)<sup>4</sup>:

$$U = [1 - p(p^e, r)]U[I_1^e - c - \pi s - r] + p(p^e, r)U[I_0^e - c + s - L(L^e, c) - r] \quad (1)$$

In the absence of market insurance,  $s$  is constrained to zero, and the individual’s choice is restricted to  $c$  and  $r$ . The utility function then becomes:

$$U = [1 - p(p^e, r)]U[I_1^e - c - r] + p(p^e, r)U[I_0^e - c - L(L^e, c) - r] \quad (1b)$$

Analogously, the model can accommodate situations where self-insurance or self-protection are not possible, that is,  $c=0$  or  $r=0$  respectively.

The optimal levels of insurance and self-protection in (1) are chosen by differentiating the utility in the full model with respect to each of the choice variable ( $s$ ,  $c$  and  $r$ ). The individual chooses the level of market insurance ( $s^*$ ) to the point where

$$\pi = \frac{pU'_0(c^*, s^*, r^*)}{(1 - p)U'_1(c^*, s^*, r^*)} \quad (2)$$

or the price at which income can be transferred from good state to bad through market insurance ( $\pi$ ) equals the probability weighted marginal rate of substitution (or the slope

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<sup>4</sup> Coping behavior, referred to in Alderman and Paxson (1992), Holzmann and Jorgensen (1999) and others, is an *ex post* phenomena, and is not a decision variable here. Where anticipated, coping options are internalized in the *ex ante* decisions in an insurance framework.

of the indifference curve in Figure 1, which neatly illustrates the tradeoffs between market and self insurance at differing market prices).

Similarly, the individual chooses the level of self-insurance ( $c^*$ ) so that the shadow price of self-insurance (the left-hand side in equation 3 below) equals the probability-weighted slope of the indifference curve (right-hand side).<sup>5</sup>

$$\frac{-1}{L'(c^*)+1} = \frac{pU'_0(c^*, s^*, r^*)}{(1-p)U'_1(c^*, s^*, r^*)} \quad (3)$$

The expenditures on self-protection reduce the probability of the bad state. These expenditures are optimized at level  $r^*$  where the marginal gain from reducing the probability of loss (the left-hand side in equation 4 below) equals the marginal loss in utility from having to pay  $r^*$  for it in each period (the right hand side).

$$\begin{aligned} -p'(r^*)[U_1(c^*, s^*, r^*) - U_0(c^*, s^*, r^*)] \\ = [1 - p(r^*)]U'_1(c^*, s^*, r^*) + p(r^*)U'_0(c^*, s^*, r^*) \end{aligned} \quad (4)$$

There are three main results of this characterization of the individual's "risk management" decisions within a comprehensive insurance model, which would be absent in treatments that either take a piecemeal approach (e.g., examine only market insurance) or neglect to include prices. First, market insurance and self-insurance are substitutes; i.e., an increase in the price of market insurance would lower the demand for it and increase that for self-insurance. This is illustrated in Figure 1 as a change from  $\pi$  to  $\pi'$ , resulting in a decline in market insurance from P to Q and an increase in self-insurance from  $M_1$  to  $M_2$ . Second, the individual is more likely to prefer market insurance over self-insurance for insuring rare losses. This is because the "shadow price" of self-

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<sup>5</sup> Both self-insurance and self-protection expenditures ( $c^*$  and  $r^*$  respectively) are incurred in both states of the world. One way to conceptualize this is to think of these expenditures being made prior to the revelation of the state of the world. Thus, for example, a farmer who invests in a grain storage facility (a form of self-insurance against crop failure) has to pay for it before the state of the world is revealed. He thus pays for it in both states.

insurance does not fall as the probability of loss decreases, while the price of market insurance does. So as the probability of loss falls (that is, the loss becomes rarer) there is an incentive to insure through the market rather than use self-insurance. Third, contrary to conventional wisdom, market insurance does not always cause moral hazard, viz., reduces expenditures on self-protection. This is because of two countervailing effects. On the one hand, market insurance reduces the *prospective loss* and therefore creates a tendency toward lower self-protection and moral hazard. But on the other, by reducing the *probability of the bad state*, self-protection makes market insurance cheaper and hence increases the tendency to use the market for insurance. Illustrating the potential complementarity between market insurance and self-protection is a key contribution of Ehrlich and Becker (1972).

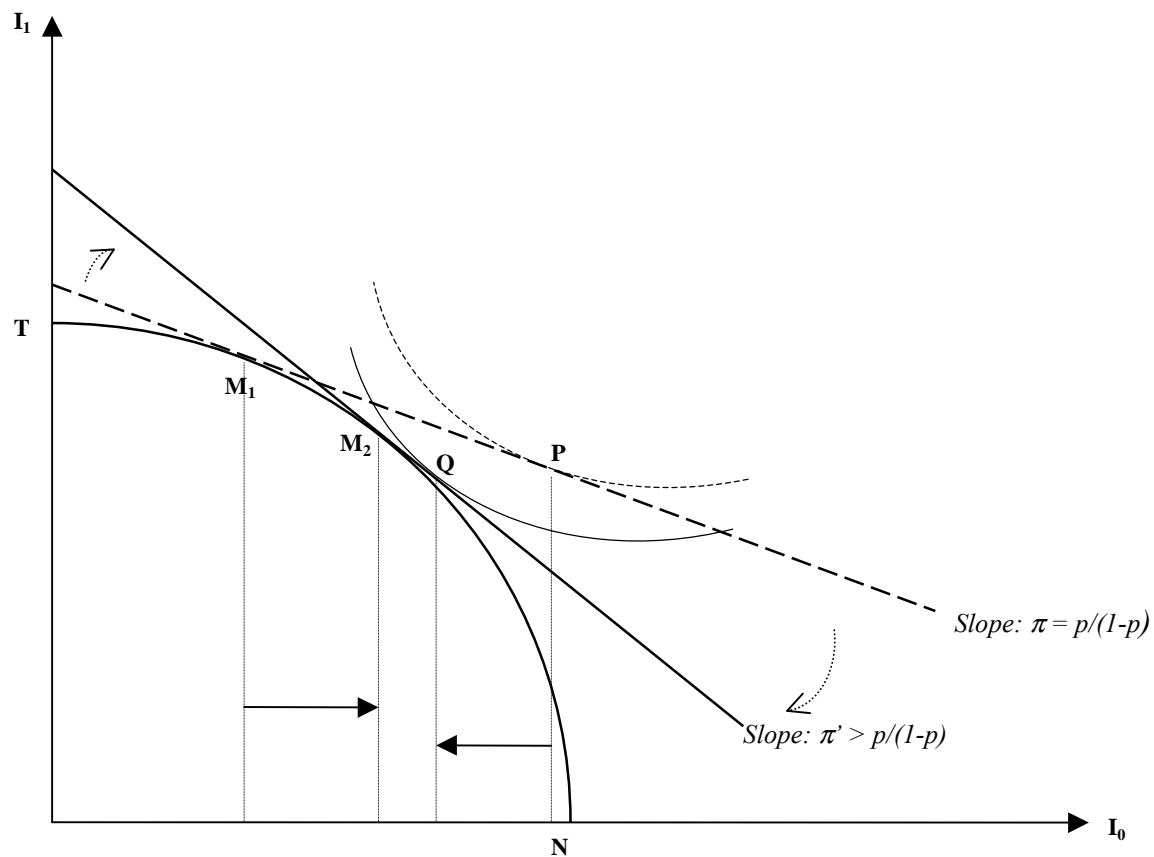
Before we conclude this section, it is important to point out that an individual enjoys higher welfare when all three instruments (market insurance, self-insurance and self-protection) are available than when one is missing. This may be best explained at a heuristic level by two examples. First, consider the case where only market insurance and self-protection are available, i.e., no self-insurance is possible. The individual would be worse off in this case compared to the case where all three are available because, for losses that are not rare, the individual would still have to use market insurance. We know from the framework that market insurance is a less-preferred instrument of insurance than is self-insurance for losses that occur frequently.<sup>6</sup> Second, consider the case where only market insurance and self-insurance are available, and that it is not possible to invest in self-protection. Individuals who are relatively efficient at self-protection would be worse off in this case because they are denied the possibility of reducing the premium they pay for market insurance by reducing their  $p$  through expenditures on self-protection.<sup>7</sup>

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<sup>6</sup> Consider a real-life example—the case of auto insurance. If self-insurance (precautionary savings) were not available then even frequently occurring small dents (from minor accidents) have to be fixed through market insurance. The individual would be worse off in this case because the premium he/she would end up paying for market insurance would be higher than the shadow price of self-insurance (since the premium paid for market insurance rises with the occurrence of small accidents but the shadow price of self-insurance would not).

<sup>7</sup> Continue with the real life example of auto insurance. Consider the case where safe drivers are not rewarded by lower premia for market insurance. Obviously, those who are efficient at reducing the probability of accidents would now be worse off.

**Figure 1: Substitution Between Market Insurance and Self-Insurance**



**An exogenous and actuarially *unfair* increase in the price of market insurance ( $\pi$ ) reduces market insurance (P to Q) and increases self insurance ( $M_1$  to  $M_2$ ).**

## 2c. Comparative Statics: Gaining Insights into Real World Changes

In this section, we illustrate the mechanics of the model through comparative static exercises, viz., by examining how the individuals change  $s^*$ ,  $c^*$  and  $r^*$  in response to changes in the parameters  $p^e$ ,  $I_1^e$ , and  $I_0^e$ , and combinations thereof.  $\pi$  is an exogenous variable as well, but it is viewed as linked to  $p$  when insurance is assumed to be available at actuarially fair prices. These changes may have parallels with real or perceived developments in the real world. Table 2 summarizes the effects on optimal market insurance, self-insurance and self-protection of the representative agent. Note that even by starting with a simple framework leads quickly to difficulty in pointing out how changes in parameters will affect  $s^*$ ,  $c^*$  and  $r^*$ . But, the exercises conducted below yield some new, even surprising, insights.

**Table 2: Changes in Market Insurance, Self-insurance and Self-protection When All are Available**

Parametric Change	Market Insurance ( $s^*$ )	Self-insurance ( $c^*$ )	Self-protection ( $r^*$ )
Increase in $p^e$ , no change in $\pi$	+	–	–
Increase in $p^e$ , increase in $\pi$	–	+	?
Increase in $I_1^e$	+	?	+
Increase in $I_0^e$	–	?	–
Increase in $p^e$ and $I_1^e$	?	?	?
Increase in $L^e$	+	?	+

### *“Heightened economic insecurity” – Increases in $p^e$*

Consider first the case where only the probability of the individual being in the bad state  $p^e$  goes up. This may be one way to characterize the recent changes in Latin America and East Asia, where it is believed that there is now greater economic insecurity. The effect of an increase in  $p^e$  results in a decline in  $s^*$ , an increase in  $c^*$  and no change in  $r^*$ .

The reasoning is as follows: assume for the sake of simplicity that market insurance is initially available at an actuarially fair price, i.e.,  $\pi=p/(1-p)$ . An increase in  $p^e$  without a change in  $\pi$  would result in market insurance now being available at better-than-fair

prices (or a negative loading factor), resulting in excess demand for insurance. This makes market insurance less expensive relative to self-insurance, so the individual lowers self-insurance. With actuarially fair insurance, the amount of self-protection depends only on the size of the endowed loss  $I_1^e - I_0^e$  and not on the probability of loss  $p$ . So  $r^*$  does not change with an increase in  $p^e$ . If a delinking of  $\pi$  from  $p$  results in the possible complementarity between market insurance and self-protection being weakened, it is likely that self-protection falls as well, creating a moral hazard for market insurers.

Suppose that the market price increases to reflect the higher odds ratio. Now we are in the “classic” Ehrlich-Becker world. While the demand for insurance overall increases, self-insurance – whose shadow price does not depend on  $p$  – is now cheaper relative to market insurance. This results in an increase in  $c^*$ , and a decrease in  $s^*$  (even though expenditures on market insurance may increase because of the higher  $\pi$ ). The effect on self-protection expenditures is uncertain.

The exercise shows the importance of *prices*. What happens to the demand for market insurance and self-insurance in this case clearly depends on whether the market price of insurance  $\pi$  adjusts to the increase in probability. If it does, then the optimal level of market insurance would be lower and self-insurance higher<sup>8</sup> But if the price of market insurance does not increase to reflect increases in  $p^e$  then there would be an “excess demand” for market insurance, and the demand for self-insurance will necessarily decline. Under prices of market insurance that remain actuarially fair after an increase in  $p^e$ , there may be little change in self-protection expenditures.<sup>9</sup>

### **“Globalization” – Increases in $I_1^e$ and $p^e$**

Consider first the case where there are higher incomes in the good state without either the increased probability of the bad state or the lower income in the bad state. In other words

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<sup>8</sup> We assume here that the exogenous change in the endowed probability ( $p^e$ ) does not alter the marginal product of self-protection expenditures—i.e.  $p'(r^*)$  remains unchanged.

<sup>9</sup> This is because under actuarially fair prices, optimal self-protection expenditures satisfy the condition –  $p'(r^*)(I_0^e - I_1^e) = 1$ . There is no effect since  $p'(r^*)$  does not depend on  $p^e$ .

good times are better and bad times remain unchanged, both in probability and in outcome. An exogenous increase in  $I_1^e$ , with  $I_0^e$  remaining unchanged, increases the size of the endowed loss  $L^e$  (viz., the loss becomes more “catastrophic”). For the sake of simplicity, assume that market insurance can be purchased at actuarially fair prices. The individual then has a greater tendency to use the market to insure against the loss, so the demand for market insurance increases. Increases in  $I_1^e$  also increase expenditures on self-protection because increases in expenditures on self-protection make each dollar of spending on market insurance more productive.<sup>10</sup> It is unclear what happens to self-insurance in this case because while on the one hand the increase in the endowed loss increases the overall demand for insurance, on the other increases in market insurance substitute for self-insurance.

Now consider the case of what we term “globalization”—when prospective income in the good state increases (viz., viewed somewhat pessimistically, losses become more catastrophic), but so does the probability of the bad state (viz., losses become less rare), that is, both  $I_1^e$  and  $p^e$  increase. Under the assumption that the price of insurance adjusts to changes in prospective probabilities, the outcome for market insurance would be ambiguous. This is because increases in prospective probabilities lower the tendency for market insurance (losses are more frequent), but increases in income in good times increase it. The effect on self-protection would be ambiguous, but probably positive.

This example illustrates the difficulty of predicting how complex phenomena such as globalization affect the demand for insurance.

### ***“Safety Nets” – Increases in Only $I_0^e$***

Suppose that the expected income in the bad state increases, e.g., because of a guarantee by the government or charitable organizations that everyone will get a minimum income in the bad state which is higher than  $I_0^e$ . According to the Ehrlich-Becker framework,

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<sup>10</sup> This is due to the optimality condition under actuarially fair prices  $-p'(r^*)(I_1^e - I_0^e) = I$ .

this reduces the demand for market insurance because the prospective loss decreases. Its effect on self-insurance is indeterminate because the fall due to the overall reduced tendency to insure is offset due to the substitutability between market insurance and self-insurance. Expenditures on self-protection fall.<sup>11</sup>

This example illustrates that it is not necessarily the case that individuals will reduce self-insurance when such a “safety net” is available, but it is quite likely that they will reduce self-protection.<sup>12</sup> Thus, for example, following the examples elaborated in the next section, the provision of a public works program will not necessarily reduce precautionary saving by individuals but would lower the effort to reduce the probability of being in the bad state (e.g., by reducing investments in health and work skills).

***“Economic Growth” – Proportional Increases in Both  $I_0^e$  and  $I_1^e$***

Economic growth and reduced poverty is simplistically characterized here by the case where both  $I_1^e$  and  $I_0^e$  *increase in the same proportion*, so the size of the prospective loss also increases by that proportion. As a result, market insurance and self-protection will increase (see above).

This example illustrates that, somewhat counter-intuitively, a “state-neutral” improvement in economic status (or wealth<sup>13</sup>) where incomes in both states go up proportionally will result in an *increase* in the demand for insurance. The reason is that the absolute size of the prospective loss becomes larger. Better income prospects in the good state will have the same effect. Even with the environment not becoming riskier, economic growth – an unmistakably “good” development – should be expected to result in an increased demand for insurance – often associated with matters becoming worse.

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<sup>11</sup> This again is due to the condition  $-p'(r^*)(I_1^e - I_0^e) = 1$ . So if  $I_0^e$  falls,  $r^*$  must rise for the relationship to hold.

<sup>12</sup> This finding is somewhat contradictory to the results of Cox, Eser, and Jimenez (1998) who find that public social security transfers crowd-out private transfers (self-insurance). But note that our framework uses only a risk lens, and incorporates only efficiency concerns.

<sup>13</sup> Wealth in this framework is measured by  $W = I_1^e + \pi I_0^e$ .



### 3. Rationale for Social Policy

Following the model presented above, the rationale for government arises from the inability of individuals to attain optimal levels of market insurance ( $s^*$ ), self-insurance ( $c^*$ ), and self-protection ( $r^*$ ). This could be due to two reasons. First, one or more of the instruments are not available to the individual. We know from the discussion in the preceding section that the absence of any one of the instruments makes an individual worse off than when all three are available. Second, all three instruments may be available but market inefficiencies may prevent individuals from employing them fully.

The role for social policy therefore arises by complicating the model, which we do by introducing changes that we believe characterize the real world: (a) Market insurance for some risks (such as the risk of becoming unemployed) does not exist. The government could step in by *providing* such insurance. (b) Private agents may self-insure using “bad” instruments (e.g., using cattle or land as a medium of precautionary saving) because “good” instruments (such as diversified financial assets) are not available. The government could step in to foster the development of such markets, e.g., through prudential *regulation* of capital markets. (c) Self-protection may best be done by investing in some type of asset (such as human capital that lowers the probability of becoming unemployed) but which forms poor collateral (viz., the individual cannot borrow against his stock of skills in case he/she does become unemployed anyway). Individuals may react by tilting their asset-profile away from human capital and towards more easily collateralized (viz., nonhuman) capital. The government could step in by *subsidizing* the acquisition of human capital.

We do not expect here to be exhaustive or definitive about the role of social policy in the presence of risk.<sup>14</sup> Our aim is simply to show how principles developed by economists on the subject of insurance can provide useful insights for social policy. We pick one

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<sup>14</sup> Note also that the role of social policy here arises solely due to efficiency reasons. There may be redistributive or equity reasons for government actions—we do not address such concerns here.

commonly used instrument in each of the three categories – market insurance, self-insurance and self-protection – for expositional purposes, though it is easy to categorize all other instruments into one or more categories. We consider the examples of *unemployment insurance as market insurance*, *precautionary saving as self-insurance* and *human capital accumulation as self-protection*. It bears repetition that we recognize that all these instruments do more than just protect from risk. But our objective here is to look solely at their risk reduction or insurance characteristics to provide insights using the economic framework. For instance, while we recognize that human capital can increase incomes in both good states and bad, we concentrate only on its ability to lower the probability of occurrence of the bad state.<sup>15</sup>

It should be emphasized that we focus here on risk-related rationale for individual and government action. For example, there are obviously other reasons to save and accumulate human capital. We are not denying those, but by focussing on the risk-saving and risk-human capital linkages, we hope to clarify key social policy questions such as the importance of financial sector development policies in a comprehensive *social insurance* setting, and why human capital has to be a central component of *social protection* policy.

### **3a. Augmenting Market Insurance: Providing Unemployment Benefits**

Unemployment in many countries can be regarded as a “rare” event. Following Ehrlich and Becker (1972), individuals would look more to the market than self-insurance to protect against relatively rare losses. The market insurance premium for a rare loss is low (essentially because  $p$  is low), but the cost of self-insurance is the same for rare as for frequent losses.<sup>16</sup> But the risk of becoming unemployed is generally not considered

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<sup>15</sup> Thus, the empirical finding that is key here is that unemployment rates are generally lower for healthier and/or more educated workers, and not that rates of return to education exceed the social cost of capital.

<sup>16</sup> Because self-insurance requires a cost in each period, it essentially has a higher loading factor for rare losses. Further as  $p$  falls (the loss becomes rarer) the shadow price of self-insurance does not fall like it does for market insurance. Thus individuals are more likely to seek market insurance for rare losses (such as unemployment) than use self-insurance (such as precautionary saving).

insurable by private agents, and worker guilds or governments sometimes step in to provide unemployment insurance.<sup>17</sup>

The problem with government-sponsored unemployment benefit schemes is that they rarely charge premia according to individual risk factors or idiosyncratic probabilities of being unemployed. Since the “premium” in unemployment insurance is collected through taxes, it is generally set at the same rate for everyone—presumably at the actuarially fair rate for the median individual. The bluntness of this instrument means that there will be an adverse selection problem for individuals whose risk of unemployment is lower than that of the median person. If higher human capital endowments imply lower probabilities of unemployment, this means that those with high levels of human capital have an incentive to exit the insurance market—i.e., go informal.<sup>18</sup> These individuals are likely to self-insure by relying on private precautionary saving. In our terminology, they will have low  $s^*$ , and high  $c^*$  and  $r^*$ .

At the other end, the blunt premium is better-than-fair for those whose risk of unemployment is higher than that of the median person. In this group are individuals who will have excessively high demand for market insurance (because to them market insurance is too cheap) and therefore they will typically have low levels of self-insurance ( $c^*$ ). It is also likely that their incentives to invest in self-protection ( $r^*$ , including human capital investments and work effort) is also lower, i.e., there is likely to be a moral hazard. This is because in this case, an additional dollar spent on self-protection does not lower the premium in the market.<sup>19</sup> Thus high market insurance lowers the prospective loss and therefore reduces the incentives to self-protect.

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<sup>17</sup> Government provision of unemployment insurance does not disqualify it from being categorized as “market” insurance. Recall that the critical assumption regarding market insurance is that it requires a premium in the good state and triggers a payoff in the bad state. Government provision would also provide pooling, a critical requirement for market insurance.

<sup>18</sup> This would be consistent with Maloney (1999), where it is reasoned that those in informal activities are heterogeneous in both observable characteristics and in their reasons for not being formal.

<sup>19</sup> Recall that in the model, market insurance and self protection could be complements if increasing investments in the latter are rewarded by lower premia for the latter. In the case of publicly provided social insurance, the bluntness of design often means that it is not tailored to individual risk factors and therefore the link between self-protection and market insurance that makes them complements is broken.

To weaken or even reverse the problem of moral hazard, governments could use employer experience rating (as in the US) and/or individual unemployment histories in setting unemployment insurance premia.

### **3b. Augmenting Self-insurance: Facilitating Precautionary Savings**

Perhaps the most important form of self-insurance is precautionary saving. In a world without risk, individuals save or postpone consumption up to the point where the marginal rate of time preference equals the rate of interest. When risk is added, individuals increase saving beyond this point.<sup>20</sup> This has costs for the individual regardless of the state of the world because the rate of time preference exceeds the interest rate. Since these costs are inferred and not observed, they imply a “shadow price”, akin to that derived from the loss function  $L(L^e, c)$  in the model.

The self-insurance nature of precautionary saving implies that it serves as a substitute for market insurance in settings where market insurance is not available, or is under-supplied.<sup>21</sup> Individuals choose the best instruments for precautionary saving that are available. The assets that provide the best hedge against loss are those whose value rises or does not fall much in the bad state. If such assets are not available, however, individuals will use “bad” instruments for precautionary saving.

Governments can augment self-insurance through precautionary savings by improving the quality of self-insurance options available to individuals. This could be done by, e.g., intervening to provide prudential regulation of banking, deposit insurance, regulating non-bank financial intermediaries, or by fostering the market for long-term public bonds.

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<sup>20</sup> See Deaton (1990). Carroll, Dynan, and Krane (1999) also find evidence of precautionary saving in the presence of unemployment risk.

<sup>21</sup> See for instance, Engen and Gruber (1995).

### **3c. Augmenting Self-Protection: Subsidizing Human Capital**

One important instrument for self-protecting against risk, or lowering the probability of an economic loss is the accumulation of human capital. Healthier persons are less likely to be unable to work, for example, and more educated or better-trained workers may be less likely to suffer long-term unemployment.

Individuals could be expected to demand investments in human capital as an important risk management device. The role for social policy arises from the special nature of human capital: long gestation lags, irreversibilities, and little collateral value. Typically human capital takes time to “build”, and requires sustained effort by families. Even brief interruptions in this process may result in large permanent effects, a phenomenon known as “hysteresis” in economics. If the bad state results in individuals or families falling below a threshold level of wealth (e.g., some poverty line), they may lower their investments in human capital.<sup>22</sup> Last, a portfolio loaded with human capital can be a poor asset to hold if the bad state occurs anyway, since it is impossible to offer human capital as collateral for borrowing. This can, among other things, reduce their incentives to self-protect in the future.

The role of social policy may be to augment self-protection efforts by individuals and families. If government efforts to augment self-protection form the core of “social protection”, then public human development initiatives will be an important component of social protection.

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<sup>22</sup> For instance Duryea (1998) finds children’s educational attainment in Brazil suffers when there is a transitory shock to household income.

## 4. Discussion

The preceding sections have set out the framework for analyzing an individual's behavior when faced with risk and possible rationale for social policy. This section points out some of the advantages of adopting this framework for designing social policy when risk is present.

### 4a. A Simpler Approach

In contrast to unstructured thinking on the subject of social insurance and social protection, this approach offers a simple yet disciplined framework for understanding individual/family behavior and devising minimalistic but effective social policy.

#### **The basic framework is comprehensive and simple**

*Individuals have three options—market or self-insurance and self-protection.* When faced with the prospect of a loss in income, the individual has two basic options: transfer income from good state(s) to bad, i.e., insure, or reduce the probability of occurrence of the bad state, i.e., self-protect. There are two avenues for insurance: market or self. While there are three basic options, the individual may have multiple instruments within each category at his or her disposal.

*All insurance and protection measures have costs.* The cost of market insurance is observable as the premium for transferring one dollar across states. The cost of self-insurance can be inferred as a “shadow price” of moving income across states. The cost of self-protection is similarly inferred from the effort of the individual to reduce the likelihood of loss.

*Rarer or more catastrophic losses are better insured through the market.* The prices of market insurance and self-insurance differ in another important respect. While the price of market insurance (e.g., the premium for life insurance) is lower if the probability of loss is lower and vice versa, the shadow price of self-insurance (e.g., the cost of

precautionary saving) does not vary with the likelihood of loss. This results in market insurance being relatively superior for insuring against some risks (larger and/or rarer losses) than self-insurance.

### **Prices play the central role in allocating resources for risk management**

While the discussion of prices or costs of instruments of risk management is largely absent in current discussions, the framework used here—by virtue of being based on microeconomic principles—puts prices center-stage.

*Substitutability depends on relative prices.* Changes in the relative price of different insurance instruments prompt changes in allocation of resources. An increase in risk that is reflected in the price of market insurance would lead to a substitution away from market to self-insurance (the price of which is invariant to risk). Alternatively, if inefficiencies in markets result in prices not adjusting to accurately reflect changes in risk, excess demand or supply would arise.

*Possible complementarity depends on prices accurately reflecting risk.* Prices of insurance instruments should differentiate by risk factors. When they do so, efforts to self-protect would not necessarily be reduced when market insurance is made available—i.e., moral hazard would be absent. While this is a somewhat obvious characteristic of privately provided insurance, social insurance schemes could, but generally do not, mimic this characteristic.

### **The rationale for social policy arises out of market failures**

With an approach that is individual-centered, the need for government arises only where markets fail. Social policy formulation is based on minimalistic and not *ad hoc* principles. The only role of government here—driven by efficiency concerns—is to augment markets.

*“Social insurance” as policies to augment market insurance.* Failure of markets to efficiently insure, e.g., because some risks are uninsurable or cannot be diversified, leads

to the rationale for social insurance policies. Following this line of reasoning, government actions that help individuals and families deal with risk by facilitating transfers from good states to bad *through risk-pooling* would be classified as “social insurance”. This would include unemployment benefits and disability insurance.

***Precautionary saving as policies to augment self-insurance.*** The failure of markets to provide “good” instruments for self-insurance is the rationale for governments to intervene. The feature that distinguishes these policies from “social insurance” is the *lack of pooling*. This category would include financial sector strengthening, mandatory saving schemes such as employee provident funds in Singapore and Malaysia, and individual severance funds in countries such as Brazil and Colombia.

***“Social protection” as policies to augment self-protection.*** The failure of markets to facilitate self-protection by individuals or families that is optimal provides the rationale for governments to intervene. The feature that distinguishes these interventions from the above two sets of policies is that the aim of social protection policies would be to reduce the probability of occurrence of the loss and not simply insure against it. Following this line of reasoning, policies to facilitate the acquisition of human capital (better health and education and training) may well constitute the core of social protection.

## **4b. Additional Insights**

### **Welfare is higher when more options are available to individuals.**

***More instruments are better than less.*** As discussed above, the availability of all three “insurance” instruments (market insurance, self-insurance and self-protection) will improve welfare over a situation where one or more instrument is not available, e.g., making unemployment insurance available is likely to be welfare improving even when efficiency losses are involved (though these losses are not *inevitable*—see next point). Making market insurance available is expected to lower self-insurance, but would still result in welfare improvements e.g., introducing unemployment insurance would raise welfare even if it lowers precautionary saving, an important form of self-insurance.



***Moral hazard is not inevitable.*** The introduction of market insurance is usually thought to lower self-protection and raise the probability of occurrence of the bad state (“moral hazard”) but our framework and common sense indicates that this can be avoided. Unemployment insurance that somehow discriminates between workers by their risk factors (e.g., premia differing across occupations) can lower *or even reverse* this negative relationship between market insurance and self-protection. Therefore, the appropriate policy question is not whether to provide unemployment insurance or not, but how to best design it and to figure out how governments can develop the capacity to implement it.

### **Demand for social insurance *can* increase even when the world is better**

In a comprehensive insurance setting, there is no contradiction between greater demand for insurance and the world being a better place to live in, either in terms of levels or predictability of income. An increased clamor for social insurance is not necessarily an indication of worsening economic circumstances.

***Positive developments could make people demand more insurance.*** Arguments that perceived or real increases in “economic insecurity” or risk have led to a greater demand for insurance are commonplace. The reasoning is that the environment, in which individuals work and live, has become more unpredictable – an obviously “bad” development if no other change has taken place. We do not dismiss such concerns. But the preceding analysis shows that even changes that are clearly “good” can lead to a greater demand for insurance. We provide two examples: first, where economic growth leads to higher “endowed incomes” in both good and bad states of the world and, second, where the probability of occurrence of the bad state falls.

***Scenario one: higher income in both good and bad states.*** Suppose that economic growth leads to incomes in both good and bad states increasing by the same proportion. For example, the income in the good state increases from \$1000 to \$1100, and that in the bad state increases from \$100 to \$110.<sup>23</sup> With this 10% increase in incomes in the two

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<sup>23</sup> Note that this should *not* be interpreted as increased inequality because the comparison is between two states of the world (for each representative agent) and not between a rich and a poor individual.

states of the world, the “endowed loss” or gap between good and bad states also increases by 10%. This increase would lead to a higher demand for market insurance (and if the market does not exist, for social insurance) and a reduced demand for self-insurance, because the loss has become somewhat more “catastrophic”. But nobody could reasonably claim that greater social insurance is being demanded because matters have taken a turn for the worse.

***Scenario two: lower likelihood of bad state.*** Take another example. Suppose that improved macroeconomic management leads to a fall in the probability of the bad state (“crisis”) occurring, again unambiguously improving the state of affairs. For example, the probability of business failure falls from 10% to 1% percent. Our framework implies that since losses have become rarer, this increase would lead to a higher demand for *market* insurance (or, if the market does not exist, for social insurance) and a reduced demand for self-insurance. But social insurance is not being demanded because the state of affairs is worse.

### **Financial market strengthening should be a central component of *social* policy**

If one explicitly takes the approach that the need for social policy or government action arises out of market failures that prevent individuals/families from pursuing effective and efficient market insurance, self-insurance, and self-protection decisions, financial sector strengthening comes out as one of the most important—and surprisingly underemphasized—policies for balanced, market-augmenting social risk management.

***Financial market reform can augment self-insurance.*** Most important, self-insurance involves precautionary saving. Without a strong financial sector, the poor end up doing so through “bad” instruments such as cattle and land, whose prices may fall if the bad state of the world (“crisis”) occurs. Financial sector strengthening can lead to “good” instruments becoming available; this is especially crucial where social insurance mechanisms such as unemployment benefits are difficult to set up.

***Financial market reform can augment self-protection.*** Second, financial sector strengthening could result in lower probabilities of the crisis occurring, thus augmenting

self-protection efforts by individuals/families. In the countries of East Asia where the financial sector weaknesses were a primary cause of the crises in the 1990s, this self-protection augmenting role of financial sector strengthening is especially important. Caballero (2000) proposes a general framework with an application to Latin American countries where the combination of weak interlinkages with international capital markets and lack of depth in domestic capital markets is identified as a primary cause of economic crises (in our framework, of higher probability of the bad state,  $p$ ).

***Financial market reform can augment market insurance*** Third, financial sector strengthening will help create (more efficient) markets for insurance against catastrophic losses such as due to poor health or natural disasters. Thus private financial markets can provide life insurance, disability insurance instruments, insurance against natural disasters and even insurance against macroeconomic crises in small countries.

#### **4c. Help in Devising a Strategy**

The ideas presented in this paper can—with some additional work—help countries devise effective strategies. It provides a strong framework that makes the linkages between social insurance, human development, financial sector and macroeconomic policies explicit, which—if augmented by institutional capacity assessments—can help in prioritizing and sequencing actions.

#### **Recognizing what prevents individuals from optimal insurance.**

Policymakers should identify what constrains individuals in using all three basic instruments of insurance and protection to their advantage and, if all three are available, then whether there are any inefficiencies that prevent optimal allocation across the three.

***Are all three available?*** In conditions where a country has good capacity, all three instruments of insurance and protection ought to be available for achieving highest welfare. For instance, if options that offer market insurance are absent, individuals would

be constrained—they would only have self-insurance and self-protection. This would yield a non-optimal level of insurance and protection. Government's role then would be to ensure none of the instruments are missing.

***Do individuals optimally allocate all three?*** Even in countries where all three are available, there may be inefficiencies that do not allow individuals to avail of them optimally. Poorly designed social insurance that augments market insurance may not allow everyone to use this instrument optimally (see our example of unemployment insurance above). Similarly, individual agents may not have the best self-insurance options at their disposal (see our example of financial versus non-financial precautionary saving above). The role for governments then would be to ensure efficient mechanisms for market- and self-insurance and self-protection are available to individuals.

***Illustration: Strategy after financial sector related economic crises.*** To better appreciate the usefulness of the framework proposed here, the study of East Asian countries afflicted by the recent crisis may be useful. Before the crisis, the insurance decisions of individuals in these countries could be characterized as being intensive in self-insurance and self-protection, viz., with low  $s^*$  (social insurance was not widespread) but high  $c^*$  (high saving rates) and  $r^*$  (high investments in human capital and wage flexibility that both lower  $p$ ). The quality of self-insurance mechanisms such as precautionary savings deteriorated due to financial sector weaknesses, which also caused risk levels to rise (thus both lowering  $c$  and raising  $p$ ), leaving self-protection as the only remaining instrument. This diagnosis suggests a strategy for socioeconomic recovery. Government actions, in order of priority, then would be: first, “give back” self-insurance instruments to individuals through financial sector strengthening; second, ensure that self-protection mechanisms are not weakened by maintaining public programs to augment human development and by keeping wages flexible; third, over the longer term, augment market insurance to give individuals a third instrument for dealing with economic uncertainty. The last instrument, which has been missing, should not be an immediate priority because governments need to build the capacity for effective provision of social insurance.

## **Capacity matters**

Countries are constrained by poor capacity (administrative, political, etc.). A strategy for social policy should account for such capacity constraints. This raises the prospect of making a distinction between medium- and long-run strategy.

*Capacity and medium vs. long run strategy.* Realistic strategy has to account for the fact that some capacity constraints cannot be relaxed overnight. The social policy strategy ought propose a policy mix that takes these constraints as given in the medium term. For instance, many countries lack the capacity to run an efficient unemployment insurance system. This means that though the development of such a system should be a long-term goal, it would be either infeasible or too costly a strategy for the medium term. Instead, the medium term approach could be for the government to augment other instruments such as self-insurance to overcome the lack of market insurance.

*Augmenting self-insurance may be a good medium-term strategy.* We know from our model that self-insurance is a substitute of market insurance (albeit an inferior one in some cases). Thus government efforts to increase the access of individuals to “good” self-insurance instruments may be the best medium term approach to overcome the lack of market insurance.

## **Distinguishing programs and policies by what they augment**

Not all programs that provide social insurance and social protection are identical. In our framework, some serve multiple functions. For example, behavior-targeted cash transfers could augment market insurance as well as self-protection while simple minimum income programs only augment market insurance (see Table 3).. This distinction between programs that offer multiple benefits compared to those that offer only one could mean that social policy should be biased in favor of the former because, e.g., they are likely to have lower administrative costs than programs that offer single benefits.

**Table 3: Government Policies and Effect on Individual Comprehensive Insurance**

Program or Policy	Principal Effect is to Augment			
	Market Insurance	Self-Insurance	Self-Protection	
			Reducing Micro Risk	Reducing Aggregate Risk
<b><i>Economywide Risks</i></b>				
Stable macro policies				✓
Fiscal stabilization funds <sup>a</sup>				✓
Foreign reserve holdings <sup>a</sup>				✓
Financial sector reform	✓	✓		✓
Deposit insurance		✓		
<b><i>Risk of Becoming Unemployed</i></b>				
Unemployment insurance	✓			
Mandated severance	✓			
Individual severance funds		✓		
Public works programs	✓			
Training programs <sup>b</sup>	✓		✓	
<b><i>Risk of Becoming Poor</i></b>				
Cash transfers	✓			
Conditional cash transfers <sup>c</sup>	✓		✓	
Education reform			✓	
Health insurance	✓		✓	
Financial sector reform		✓		
<p><b>Note:</b> a. Policies that augment self-protection for individuals may be self-insurance or market insurance at the <i>country</i> level. For example, fiscal stabilization funds are self-insurance (because they transfer resources from good states to bad) for countries, though they qualify as self-protection augmentation here (because they reduce aggregate risk for individuals). Access to International Monetary Fund credit during bad times is market insurance for countries (international risk-pooling), but is again self-protection augmentation at the individual level.</p> <p>b. Although in theory training programs for the unemployed involve an element of self-protection, this element appears modest according to the available evidence, so that these programs operate mainly as insurance mechanisms.</p> <p>c. Examples include <i>Bolsa Escola</i> in Brazil and <i>Progresá</i> in Mexico.</p>				

Table 3 illustrates how the approach developed here can be used to classify (and even prioritize among) commonly used social policies and programs; that is government efforts to augment comprehensive insurance efforts by individuals or households. Table 4 provides a classification of other government actions according to the framework.

**Table 4: Classifying Other Government Policies**

<b>Policy Source/ Amplifier of Volatility</b>	<b>Market-type Insurance</b>	<b>Self-Insurance</b>	<b>Self-Protection</b>
Terms of trade	<ul style="list-style-type: none"> <li>• International portfolio diversification</li> <li>• Hedging</li> </ul>	<ul style="list-style-type: none"> <li>• Stabilization funds</li> </ul>	<ul style="list-style-type: none"> <li>• Trade diversification</li> <li>• Trade taxes/subsidies</li> </ul>
International capital flows	<ul style="list-style-type: none"> <li>• Contingent credit lines</li> </ul>	<ul style="list-style-type: none"> <li>• Liquidity hoarding</li> </ul>	<ul style="list-style-type: none"> <li>• Debt management</li> <li>• Limit current account gaps</li> <li>• Capital controls</li> </ul>
Financial system	<ul style="list-style-type: none"> <li>• Facilitate risk diversification through capital market development</li> <li>• Internationalization of the banking system</li> </ul>	<ul style="list-style-type: none"> <li>• Enhanced capital and liquidity requirements for banks</li> </ul> Deposit insurance	Adequate bank regulation and supervision Avoidance of portfolio mismatches
Fiscal policy		<ul style="list-style-type: none"> <li>• Precautionary targets and contingent rules</li> </ul>	<ul style="list-style-type: none"> <li>• Tax base diversification</li> <li>• Public debt management</li> </ul>
Monetary and exchange rate policy		<ul style="list-style-type: none"> <li>• Clear and transparent exchange rate/monetary rules</li> <li>• Balance flexibility against credibility</li> </ul>	

*Note:* We are grateful to Luis Servén for this table.

## 5. Conclusions

This paper proposes a relatively simple approach to the problem of risk—both in terms of individual decision-making as well as the possible role of government. The approach uses the principles set forth in Ehrlich and Becker (1972), in their seminal paper on the subject of insurance decisions when the options include purchasing market insurance, of self-insuring, and efforts to lower the probability of incurring losses (self-protecting). The role of government policy arises when some markets are missing and individuals cannot reach optimal levels of insurance and self-protection. Using this approach, the paper traced the implications of changes in the environment—such as increased risk or increased wealth—on the demand for market insurance, for self-insurance, and for self-protection. Combined with the possibility that markets are missing or do not operate efficiently, these findings suggest how the demand for social insurance and social protection may arise when such changes take place as countries grow or face more or less risky external environments.

Some of the findings were expected, while others seemed surprising. In the latter category, three findings deserve mention. The first is that the demand for social insurance can increase even when the environment becomes *less* risky and countries become *more* prosperous. This finding is surprising when market- or government-provided insurance is analyzed in isolation, but is a natural outcome of analysis using a more comprehensive (and more realistic) framework where individuals self-insure and self-protect as well. The second finding is that social policy should ideally aim to facilitate all three types of actions that individuals take when confronted by risk. While capacity of government clearly matters here, this finding should weaken the prejudice against some policies such as unemployment insurance in developing countries, even when efficiency losses may be involved. The third finding is that the role of policies to facilitate precautionary savings (such as financial sector strengthening) has been underemphasized as a *social* policy instrument. This finding is a natural consequence of an approach that begins with the individual and derives the problem of government as a residual, but can easily be missed by analyses where this order is reversed.



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