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IMF Conditionality and Program Ownership: A Case for Streamlined Conditionality

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Abstract

Program conditionality and ownership are important considerations in the IMF's current rethinking of program design. This paper contributes to the literature by developing a theory of program conditionality and ownership on the basis of Cumulative Prospect Theory. The policymaker may value a set of programs, each with fewer conditions, more than an extended program with as many conditions. This valuation bias is greater in ambiguity (Knightian uncertainty) than under uncertainty. If greater valuation of a program engenders more explicit and implicit ownership, then programs with fewer conditions may have a better chance of success. Less is more.

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I. Introduction

Streamlining program conditionality and determinants of program ownership are central issues in the IMF's current rethinking of program design. The emerging broad consensus is that IMF programs should go back to the basics and contain fewer conditions rather than many. In recent past, IMF programs have tended to contain many conditions. This has reflected a number of important global developments in the last decade. An important development has been the emergence of transition countries and their need for a myriad of fundamental reforms in tandem with IMF financing. In more recent past, the Southeast Asian crisis and other crises around the world (in, for example, Mexico, Argentina, Brazil, and Turkey) have also likely contributed to the tendency to incorporate a greater number of conditions in IMF programs. Those crises have revealed many distortions in the developing world and in the emerging markets that have traditionally been market economies. Those distortions have greatly limited the developing countries' ability to cope with rapid globalization and have called for increased conditionality in IMF rescue packages, predicated on the implementation of many reforms in order to prevent the recurrence of financial crises in an increasingly globalized world economy. In many cases, however, programs have failed, or at least stalled, and the greater part of a rather long list of program conditions has been abandoned.

A fundamental reason why such program failures occur is the inability to engender explicit and implicit program ownership in a country.[2] Country authorities often negotiate a program in good faith and explicitly agree to implement a set of conditions toward economic recovery and sustainability. However, the strength of a country's implicit ownership of a program is difficult to assess. Social and political pressures may undermine consensus—which may not have been there to begin with—often dooming programs to failure.

The current thinking of the IMF is that engendering program ownership by different actors who may influence a country's commitment to a program is imperative for the success of the program. It has been also recognized that program ownership may be more easily mustered with streamlined conditionality, especially in the case of longer-term structural adjustment programs. This paper provides a theoretical framework in support of streamlined conditionality to foster greater program ownership. It is a model of decision making in uncertainty grounded on Cumulative Prospect Theory (CPT), originally developed by Daniel Kahneman and Amos Tversky (1979, 1992). The model is extended to the case of ambiguity (Knightian uncertainty). Ambiguity is defined as a second-best situation in which the probabilities associated with outcomes are not known with precision. Like most economic decisions, IMF programs are also designed and implemented in an environment characterized by ambiguity.

The paper's first contribution is to show that, under CPT, a set of programs, each with fewer conditions, may be valued more than an extended program with as many conditions.

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[2] Such possible lack of consensus may result in resistance to reform; see, for example, Fernandez and Rodrik (1991) and Dewatripont and Roland (1994).

Therefore, streamlined programs may muster greater ownership. The paper's second contribution is to show that the foregoing argument is strengthened in an ambiguous decision environment. Thus, the paper makes a formal case for streamlined conditionality. The lesson is that *less is more.*

The paper is planned as follows. Section II presents some preliminary observations on the broad nature and modalities of IMF programs and highlights the economic value of policy flexibility in program design. Section III lays out the CPT-based model used in this paper and contrasts its implications to those that follow from Expected Utility Theory (EUT). Section IV relates the model and its arguments to previous literature. Section V concludes.

II. Preliminary Observations

Program conditions are typically interdependent and the success of one condition depends on the success of others. Of course, economic reforms can be viewed as a set of program conditions also. A set of program conditions may be implemented as *prior actions* in the initial period or as *program benchmarks* at specified dates, as agreed under the program. What distinguishes program conditionality is that a set of conditions are implemented in specified time periods and such a precommitment is made by the policymaker. Thus, under uncertainty about outcomes, it is possible to view a set of program conditions as a compound lottery or a compound prospect. I will refer to such a precommitment to a set of program conditions as *compound conditionality*.

When such a precommitment to the conditionality package as a whole is not required, this implies that some program conditions can be deferred to the future at the discretion of the policymaker. Thus, the implementation of program conditions may be split over time, that is, compound conditionality may be split into a number of *streamlined* or simple sub-conditionalities. I will refer to a time-wise split set of program conditions as *split conditionality*.

In practice, splitting conditionality may not be feasible for some programs. Program conditions are highly interdependent, and more fundamental program conditions are more interdependent. For example, in a short-term stand-by arrangement (SBA), some basic conditions must be implemented in order to avert an impending crisis or to get out of an ongoing one, conditions such as devaluing an overvalued currency, lowering the budget deficit, and price liberalization. There is a great interdependence between those conditions and their concurrent implementation is imperative for program success. So, at least from the program sponsor's point of view, splitting highly interdependent conditionality may not be economically feasible. It is also possible that political constraints do not permit splitting.

Nevertheless, the policymaker may reserve the option of splitting compound conditionality, at least implicitly. As frequently observed in the course of IMF programs, the policymaker may be willing to effect devaluation but he is not willing to lower the budget deficit to the extent required by the program sponsor. In other words, explicitly, the policymaker may acquiesce to lowering the budget deficit by the magnitude required by the program sponsor but, implicitly, he may be committed to lowering the deficit by only a smaller magnitude. In so doing, he may implicitly reserve the option of splitting budgetary adjustment from devaluation to some extent, and he may be willing to pay the price for this decision.[3] This may imply he may prefer less specific conditionality. Similarly, devaluation typically calls for an overall price increase, but the policymaker may prefer insulating for a duration some prices (for example, prices of gasoline and basic staples) from the full impact of devaluation. Thus, he may prefer to split to some extent the overall price adjustment condition from the devaluation condition, and he may be willing to bear the cost of the consequences.

Feasibility of splitting conditionality is more apparent in longer-range program arrangements, such as structural adjustment programs. In such programs, there are many conditions that go well beyond the few basic program conditions that are indispensable and urgent for the success of a short-term program. Those conditions may include tax and expenditure reform, tariff reform, financial sector reform, privatization, retrenchment of public sector employment, and so on. Although such conditions are also critical for long-term sustainability and growth, they do not have the urgency of the conditions required for a quick, short-term adjustment as in a SBA. Importantly, interdependency between conditions relevant for structural adjustment programs is less apparent. For example, financial sector reform may be urgently needed and may have to be effected quickly in order to avoid recurrence of financial crises in the future but the interdependence between financial sector reform and public sector retrenchment is not urgently compelling. Consequently, splitting longer-term program conditions and reforms appears to be a feasible exercise and may even be the economically and politically beneficial choice.

IMF programs are public investments into the well-being of the economy. Compound conditionality is similar to a precommitment to a multi-stage investment over time. Split investment decisions, on the other hand, allow for the flexibility of not making a pre-commitment and deferring some investment decisions into the future until after uncertainty is resolved about the earlier decisions. In most circumstances, such flexibility has *option value*.[4] With these preliminary observations, the model is introduced in the next section.

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[3] Implicit dissent in the face of a given program condition may mean that the policymaker agrees to implement that condition to elicit an IMF program—and the financing thereof—but, in reality, he has no intention of implementing it, or, he intends to implement it only partially. The price the policymaker pays for splitting conditionality is, for example, deferring the benefits of some conditions until later, the possibility of further deterioration in the budgetary position, loss of the whole or a part of IMF financing, and so on. More generally, the cost of choosing a split prospect is accepting a lower expected value than that offered by a compound prospect.

[4] For an extension of options theory to investment theory, see Dixit and Pindyck (1994).

III. THE MODEL

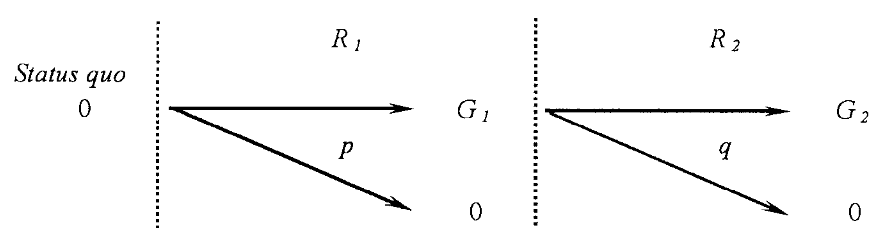
Throughout the analysis below, I assume that the policymaker is altruistic and represents the *homogeneous* interests of the public. The analysis is based on expected values rather than expected utilities.[5]

A. The EUT Model

This model is a modified version of the model proposed by Dewatripont and Roland (1995). Those authors' model relies on the *explicit* option value of the gradualist reform (conditionality) implementation strategy. The explicit option value of splitting a compound prospect emanates from the possibility that, if the outcome of a sub-prospect in the package is bad, the outcomes of the subsequent sub-prospects in the same package may be worse. The modification in the present model is the elimination of the explicit option value. This modification strengthens Dewatripont and Roland's results. In turn, if the explicit option value were not eliminated, the results of this paper would become stronger.

If the explicit option value of the split prospect is eliminated, a compound prospect dominates the sum of its component sub-prospects. This is illustrated in Figure 1 below. In that figure, status quo is indexed at zero, as in CPT. It is important to note that compound conditionality implies that a *sequence* must be followed and R_2 will be implemented only if R_1 pays off; the preferred sequence is $R_1 \rightarrow R_2$ by assumption.

Figure 1. Compound and Split Prospects Compared



The first condition, R_1, pays G_1 with probability p, zero otherwise. If the outcome of R_1 is good, that is, if it pays G_1 instead of zero, then the second condition, R_2, is implemented, and R_2 is expected to pay G_2 with probability q, zero otherwise. Compound conditionality implies that a commitment is made to implementing both conditions, R_1 and

[5] The analysis remains valid if expected values are replaced by expected utilities, as long as the utility function is separable between outcomes. This assumption is the equivalent of the *independence axiom* of EUT. In this paper, I assume that the independence axiom holds, therefore, outcome utilities over time are separable (therefore, additive). The analysis does not critically depend on risk aversion, and, for simplicity, expected values may be used instead of expected utilities, that is, we may assume that the decision maker is risk neutral.

R_2. However, if the first condition does not pay off, then the program is terminated; in other words, there are no possible losses from implementing R_2, if the outcome of R_1 is bad (if it pays zero). Therefore, split conditionality has no explicit option value. Split conditionality indicates that, after R_1 is implemented, R_2 will be implemented independently of the outcome of R_1 (whether R_1 pays off or not) but R_2 will be implemented one period later.

The expected value of compound conditionality (*C*) is:

$$EV(C) = pG_1 + pqG_2,\ G_1,\ G_2 > 0.$$

Under split conditionality, the policymaker implements R_1 in the initial period and R_2 in the subsequent period, hence G_2 is discounted explicitly at the rate δ. Therefore, the expected value of time-wise split conditionality (*S*) is:

$$EV(S) = pG_1 + pqG_2/(1+\delta).$$

It is clear that compound conditionality dominates split conditionality because split conditionality has no explicit option value and the payoff to R_2 under split conditionality is discounted. This is to say that the policymaker should commit to compound conditionality and reap the rewards of a program early on rather than opt for split conditionality and defer some of the rewards until later.

What if there is no discernible explicit option value to splitting a compound prospect? As in the above example, it is possible that if the outcome of the implementation of a program condition slated early in the preferred implementation sequence is bad, then the entire program may be abandoned at no or little cost. Importantly, there may not be enough information available in order to assess the consequences of committing to a compound conditionality package in a given sequence; therefore, it may not be possible to assess an explicit option value with an acceptable degree of precision. But if the explicit option value of a prospect is eliminated then the compound prospect is preferred to the split prospect. This is the implication of the standard discounted utility model and its extension to uncertainty under EUT.

B. A Model Based on CPT

Basic Arguments and Theorems

Application of CPT to the foregoing simple model produces remarkably different results. Contrary to *the reduction of compound lotteries axiom* of EUT, compound lotteries or prospects *cannot* be reduced to simple or split prospects. If it is feasible to split compound prospects into a number of independent (or, less interdependent) sub-prospects, then the split prospect has an *implicit option value*. Moreover, if more interdependent sub-prospects are added to the package, then the implicit option value of the split prospect rises, that is, the split prospect is valued even more relative to the compound prospect. This effect is more pronounced in ambiguity than it is in uncertainty.

According to CPT, the event probabilities are not linearly additive. Based on experimental results, CPT posits that event probabilities are subjectively weighted according to a function that displays the subadditivity property.[6] Such a function may be parameterized as below:

$$w(p) = \frac{p^{\alpha}}{[p^{\alpha} + (1-p)^{\alpha}]^{1/\alpha}},\ 0 < \alpha < 1, \qquad (1)$$

where α is the uncertainty aversion parameter. A higher value of α implies less subadditivity, and conversely.

It can be shown that the subadditivity property of the CPT weighting function implies that the following theorem holds:

> *<u>Theorem 1</u>: If the probability weighting function w(.) is subadditive, then* $w(p_1)w(p_2)\ldots w(p_n) < w(p_1 p_2 \ldots p_n)$, *provided that* $p_1 p_2 \ldots p_n \neq 0, 1$.

This theorem is the compound lottery version of the *event-splitting effect* implied by the CPT probability weighting function, which I will refer to as the *compound event-splitting effect* (CESE). The CESE is implied by the subadditivity property of the CPT probability weighting function.[7]

The economic rationale behind *Theorem 1* can be explained as follows. In the compound prospect, the final payoff from both prospects depends on the outcome of the first prospect. But in the split prospect, the payoff from the second prospect does not depend on the outcome of the first prospect; therefore, the split prospect has an *implicit option value*, that is, the option of being able to play the second prospect, even if the first prospect does not pay off. Therefore, the split prospect is valued more, even if its expected value with additive probabilities (its *standard* expected value) is the same as the compound prospect. The split prospect offers the *flexibility* of not forfeiting the second prospect, if the first prospect does not pay off. According to *Theorem 1*, such flexibility has economic value, which is captured by the CPT probability weighting function. The implicit option value of a split prospect is *not* captured by EUT because, the expected values of both split and compound prospects are one and the same according to EUT (save for positive time discounting).

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[6] That is, the subjective probabilities summed up over the feasible outcomes do not necessarily add up to unity. For a discussion of the subadditivity property, see, among others, Tversky and Kahneman (1992).

[7] The lower subadditivity property of the CPT probability weighting function implies that $w(p_1+p_2) \leq w(p_1) + w(p_2)$, subject to $p_1 + p_2 \leq 1-\varepsilon$, where ε is a small number. So, a split prospect that pays G such that $EV(S) = [w(p_1)+w(p_2)]G$ is superior to one that pays the same prize but is juxtaposed as $EV(C) = w(p_1+p_2)G$, that is, $EV(S) \geq EV(C)$. This effect is called *the event-splitting effect*. For discussions of and experimental results on this effect, see Starmer and Sugden (1993) and Humphrey (1995). For the proofs of the theorems used in this study, see Erbaş (2002b). The value of α in (1) has been estimated in the range of 0.61–0.69.

Program conditionality as a pure gain prospect

Casting IMF program conditionality as a pure gain prospect is sufficient to demonstrate the main point of this study.[8] In Figure 1, notice that the expected payoff from R_1 is common to both compound and split conditionality, so the comparison of those two prospects may be based on the comparison of the expected payoff from R_2 that emanates from the good outcome of R_1, or G_1. The expected values are:

$$EV(C_2) = w(p)w(q)G_2 \; ; EV(S_2) = \frac{w(pq)G_2}{(1+\delta_2)}, \tag{2}$$

where $EV(C_2)$ denotes the expected payoff to R_2 under compound conditionality and $EV(S_2)$ denotes the expected payoff under split conditionality.[9] If compound conditionality is preferred to split conditionality, then the payoff to R_2, or G_2, will be forthcoming in the initial period. But if split conditionality is preferred, then R_2 will be implemented in the following period and the payoff to R_2, or G_2, is discounted explicitly at the rate δ_2.

Comparison of the expected values in (2) shows that, according to *Theorem 1*, for compound conditionality to dominate split conditionality, the explicit discount rate must be sufficiently large so as to dominate the implicit option value of split conditionality. That is,

$$EV(C_2) \geq EV(S_2) \; if \; \delta_2 \geq \frac{w(pq)}{w(p)w(q)} - 1. \tag{3}$$

As an illustration, consider Example 1 below, where $w(.)$ is calculated according to (1) with the value of α as given.

<u>*Example 1*</u>

$$\alpha = 0.6; p = q = 0.8; w(p) = w(q) = 0.6; w(pq) = 0.49; G_2 = 100$$

$$EV(C_2) \geq EV(S_2) = 35.8 \quad if \quad \delta_2 \geq 0.37.$$

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[8] It is more realistic to interpret IMF programs as pure gain or mixed prospects. Mixed prospects involve both gains and losses. For an analysis of pure loss and mixed prospects in a dynamic context, see Erbaş (2002b).

[9] The formulation in (2) can be justified along the lines of the analysis proposed by Segal (1987), who posits that an ambiguous lottery can be viewed as a compound (two-stage or multi-stage) lottery.

The implied discount rate can be very high indeed (which can imply unrealistic degrees of risk aversion under EUT). If we assume that the explicit discount rate is a constant—as commonly assumed in discounted utility analysis—then, for $EV(C_2) \geq EV(S_2)$, either compound conditionality needs to pay a higher payoff, or, split conditionality needs to pay a lower payoff.[10]

The significance of the foregoing observation becomes clear if we add a third condition to the program package, R_3. Suppose that, if compound conditionality is chosen, R_3 is expected to pay G_3 with probability v, zero otherwise. For simplicity, let us further assume that the parameter values are such that the policymaker is indifferent between compound and split conditionality with two conditions. Thus, the policymaker is willing to implement R_1 and R_2 in the initial period but he is concerned about whether he should implement R_3 in the same period or split R_3 from R_1 and R_2 and defer it until the next period. With this assumption, compound and split conditionality can be compared by comparing only the expected payoff to the third program condition. Similar to (2), we can easily show that the expected values are:

$$EV(C_3) = w(p)w(q)w(v)G_3; \; EV(S_3) = \frac{w(pqv)}{1+\delta_3}G_3. \qquad (4)$$

According to (4), $EV(C_3) \geq EV(S_3)$, if $\delta_3 \geq \frac{w(pqv)}{w(p)w(q)w(v)} - 1$. Comparing δ_2 and δ_3, we can show that $\delta_3 > \delta_2$ by *Theorem 1*.[11] This means that the policymaker who is facing compound conditionality with three conditions discounts the payoff from the third program condition, R_3, at an even higher rate than the rate at which he discounts the payoff from the second program condition, R_2. Alternatively, the policymaker requires a higher payoff to R_3 in order to accept compound conditionality with three conditions than the payoff he requires to R_2 in order to accept compound conditionality with two conditions.

An increasing explicit time discount rate that applies to split conditionality, or, an increasing payoff that applies to compound conditionality, is an intuitively unappealing conjecture. However, an increasing implicit discount rate that applies to the sequence of conditions contained in compound conditionality is intuitively appealing because implicit discounting reflects the increasing value of policy flexibility as more conditions are added to a program. Compound conditionality becomes less and less flexible as additional conditions are added to the program package, therefore, the implicit option value of the same conditions

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[10] We can make the same arguments by positing that splitting the compound prospect decreases the payoff probability of R_2. Here, the simplifying assumption is that the payoff probabilities remain unchanged but the payoff to R_2 when the prospect is split may be lower than it is if the prospect is not split.

[11] $\delta_3 > \delta_2$ requires that $w(pqv)/w(p)w(q)w(v) > w(pq)/w(p)w(q)$, or, $w(pqv)/w(pq)w(v) > 1$. Let $pq = z$, therefore, $w(zv)/w(z)w(v) > 1$ by *Theorem 1*.

in split conditionality increases. This is because, the more downstream a condition in the preferred implementation sequence, the greater is the number of conditions that precede it. The outcome of the n^{th} condition depends on the $n-1$ conditions that precede it; the outcome of the second condition depends only on the outcome of the first condition. Thus, compound conditionality may have a high implicit cost emanating from its inflexibility. Alternatively, spit conditionality may have a high implicit option value due to its flexibility.

Implications for streamlined program conditionality: Less is more

The foregoing result provides an important insight. For a sufficiently high implicit option value of splitting R_3 from R_1 and R_2, compound conditionality may require a high payoff. If additional conditions, R_4, R_5, ... are added to the program, those conditions require successively higher payoffs to be acceptable to the policymaker under compound conditionality. Beyond a number of indispensable program conditions, it is implausible to assume that more conditions will enable a program to pay increasingly more. Consequently, streamlined program conditionality may be valued more by the policymaker than extended conditionality. Streamlining program conditions, when feasible, so as to allow the policymaker (or, the prospective owner of the program) to split those conditions to some extent may therefore increase explicit and implicit program ownership and the odds of sustained commitment to full implementation. Of course, the more flexible approach may come at a cost (for example, lower payoffs). However, it is equally implausible that such costs will increase beyond a number of indispensable conditions so as to dominate the increasing implicit option value of splitting conditionality over the full conditionality range.

Program success with a more flexible approach is better than *ex ante* explicit commitment to the program but *ex post* program failure because of the implicit unwillingness (or inability) to implement less flexible conditionality at an agreed date. If the program sponsor insists on the implementation of all conditions together, the policymaker may explicitly acquiesce to this demand, although implicitly he does not intend to implement some conditions until later. This is to say that the policymaker might implicitly streamline extended conditionality anyway. Thus, extended conditionality may sow the seeds of time inconsistency. If the policymaker reneges on implementing some conditions after the first batch is implemented, he is explicitly behaving in a time-inconsistent manner (in violation of program commitments), although implicitly he is following a time-consistent policy. Streamlined conditionality may unify explicit and implicit program ownership and enable the policymaker to behave in a time-consistent manner explicitly.

Impact of ambiguity

In the above analysis, the underlying assumption is that the payoff probabilities are known with precision. Of course, in reality, those probabilities (and payoffs) are not known with precision, in other words, there is ambiguity. IMF programs are designed and implemented in varying degrees of ambiguity, reflecting the indigenous conditions in program countries, such as availability of relevant data, institutional strength, implementation capacity, vulnerability to extraneous events like wars, political instability, drought, and so on. Program ownership may be more difficult to muster when conditionality increases because increased conditionality may result in increased ambiguity. Consequently, the prospective owners may exhibit *status quo bias* and may be reluctant to claim program ownership, at least implicitly.[12]

According to Segal's (1987) analysis, the impact of ambiguity can be evaluated by comparing a simple prospect that involves one uncertain event to one that involves two uncertain events. Suppose a prospect, R, offers the prize G if event A occurs with probability $z = pq$, zero otherwise. Another prospect, R', pays the same prize if both event A_1 and A_2 occur in succession, the event probabilities being p and q, respectively. Similar to the sequence shown in Figure 1, if A_1 does not occur, then A_2 does not occur, either, and the payoff is zero. It follows from *Theorem 1* that $R > R'$ because $w(z) = w(pq) > w(p)w(q)$. The interpretation is that R is viewed as an uncertain prospect but R' is viewed as an ambiguous one. Uncertainty is preferred to ambiguity.

An alternative interpretation of the impact of ambiguity is due to Tversky and Fox (1995). They posit that the subadditivity property of probability weighting in ambiguity may be more pronounced than it is in uncertainty. In other words, the function in (1) is more subadditive in ambiguity than in uncertainty. In the present context, this implies that the CESE is more pronounced in ambiguity than in uncertainty, as stated in *Theorem 2* below.

> <u>*Theorem 2*</u>: *Since the super-multiplicative property holds if and only if w(.) is subadditive, the more subadditive is w(.), the greater the difference* $\Delta = w(p_1 p_2 \ldots p_n) - w(p_1)w(p_2)\ldots w(p_n)$.

Consequently, the case for split conditionality is strengthened in ambiguity. This is illustrated in Example 2 below, which shows that, in ambiguity, split conditionality is valued even more relative to compound conditionality.

<u>Example 2</u>

$$EV(C_2) = w(p)w(q)G_2(C);\ \ EV(S_2) = w(pq)G_2(S)/(1+\delta_2);$$

$$p = q = 0.8;\ G_2(C) = 124.2;\ G_2(S) = 100;\ \delta_2 = 0.10$$

<u>*α = 0.6 (less subadditive)*</u>

$$EV(C_2) = EV(S_2) = 44.5;$$

<u>*α = 0.5 (more subadditive)*</u>

$$EV(C_2) = 30.7 < EV(S_2) = 37.1.$$

According to *Theorem 2*, the more subadditive case (α = 0.5) can be interpreted as the case of (greater) ambiguity and the less subadditive (α = 0.6) case as the case of uncertainty (smaller

[12] On the status quo bias, see, among others, W. Samuelson and Zeckhauser (1988).

ambiguity). Therefore, it can be argued that, in ambiguity, the policymaker exhibits greater bias for split conditionality.

IV. Discussion

The main vehicle that delivers this model's results is the CESE. This effect indicates that compound prospects are not reducible to split prospects because split prospects have an implicit option value. Therefore, the decision maker is willing to pay a premium to split a compound prospect with sequentially dependent payoffs into a number of sub-prospects with sequentially independent payoffs. In other words, the decision maker has a preference for flexibility and he is willing to pay for it.

The economic value of flexibility has been recognized in the literature. Koopmans (1964) noted that, in real life, a sequential decision program is never realized in full detail as a "completely spelled-out program." In the present context, that observation implies that future opportunity sets cannot be anticipated in full detail because probabilities and payoffs associated with those opportunity sets cannot be known with precision. In other words, sequential decision programs are ambiguous. Koopmans's analysis indicates that a more flexible program can be broadly defined as one that incorporates a greater number of sub-opportunities over time. IMF conditionality and reforms are programs like those described by Koopmans. Especially for policy decisions that have a bearing on multi-generational social welfare, the value attached to policy flexibility can be very large. In this model, flexibility emerges through splitting a compound prospect into independent (or, less interdependent) sub-prospects. Splitting the program improves flexibility because, over time, the split program presents a greater number of sub-opportunities than the compound program. The policymaker reserves the flexibility of trying the remaining sub-opportunities over time—some foreseen, some unknowable—even if none of the sub-opportunities tried until then has paid off. So, streamlined conditionality and the gradualist strategy in reform implementation can be viewed as presenting the policymaker with a more flexible program in the sense of Koopmans.

A related consideration is the *irreversibility effect*. Henry (1974) defines a decision as irreversible if it significantly reduces for a long time the variety of choices that would be possible in the future. Some programs conditions—their possible bad outcomes being irreversible for a long time—are inflexible because they greatly restrict the sub-opportunities that may otherwise present themselves in the future course of economic policy making. Of course, the policymaker's opportunity set, at least implicitly, includes inaction, that is, *not* implementing a program condition or reform, as promised. In the face of economic exigency, a policymaker—even if he is benevolent—might be compelled to behave in a *dissembling* manner.

Another early discussion of economically significant benefits from flexibility is by Marschak and Nelson (1962). They argue that flexibility comes at a cost—like the cost of accepting lower payoffs under streamlined conditionality, or, like the cost of deferring some reforms into the future under the gradualist reform strategy. They propose a measure of flexibility according to which the more the decision maker expects to learn from each decision outcome and over time, the more he values flexibility. It is easy to relate this measure to ambiguity. When the passage of time is economically significant and there is something to be learned as time passes, availability of additional information may lower ambiguity about the sub-opportunities in a program. Then a program with a bundle of time-wise split simple sub-opportunities is valued more than a compound program with the same standard expected value. A split program is more flexible in the sense that it offers an opportunity to lower ambiguity and a compound program is not flexible (or less flexible) in the same sense. Therefore, in ambiguity, flexibility has greater implicit option value.

Along similar lines, Kreps (1992) outlines diminishing ambiguity over time as a process of learning from the consequences of a particular decision, learning more about the possible states of nature, and learning about how valuable is reserved flexibility in some of the contingencies that can be anticipated. In other words, there is ambiguity about contingencies and future information flows may reduce ambiguity. Such extraneous information flows are not modeled in this study. However, the impact of ambiguity on the preference for flexibility is captured by a more subadditive probability weighting function. If the probability weighting function is more subadditive in ambiguity than in uncertainty, this intuitively reflects, first, a lack of enough information about the payoff probabilities to be able to reduce the choice problem to uncertainty, and, secondly, anticipation of additional information that could be had, given enough time to gather such information and learn from experience.

This possibility implies that presenting the policymaker with a less flexible program sows the seeds of time inconsistency in program implementation. A more flexible program, however, enables the policymaker to be less dissembling and more committed to the program because he values such a program more. Thus, his policy stance is more credible and less vulnerable to time inconsistency. The argument that more flexible policy programs are less vulnerable to time inconsistency has precedent in the literature. Hammond (1976) argues that precommitment cannot be regarded as a way of making dynamic choice consistent. He distinguishes between "naïve" and "sophisticated" decision makers, the latter being the non-myopic decision maker who anticipates his future choices. So, if a future state of the world calls for not implementing a condition or a reform in the program, the "sophisticated" decision maker, having taken this eventuality into consideration, behaves consistently by not implementing that condition. But his observed action is time inconsistent; in other words, he is implicitly time consistent but explicitly not. Similarly, Pollak (1968) argues that a sophisticated individual recognizes his inability to precommit his future behavior beyond the next decision point and, therefore, adopts a strategy of consistent planning and chooses the best plan among those he will actually follow. The implicit plan or conditionality the sophisticated policymaker may actually implement can therefore be at significant variance with the program conditions to which he explicitly consents during program negotiations. Streamlined conditionality, however, may present an incentive to the program's owner because streamlined conditionality is valued more and, thus, it may elicit a more transparent policy stance, and improve commitment to a program.

V. Conclusions

Based on CPT, this paper has argued that compound conditionality is not reducible to split or streamlined conditionality. In most economically meaningful situations, split conditionality may be preferred to compound conditionality. The case for streamlined conditionality is stronger under ambiguity than it is under uncertainty.

Streamlined program conditionality, as well as allowing the flexibility of gradualism in reform implementation, may secure a greater explicit and implicit commitment to implementing additional conditions (reforms) in the future. But there may be no implicit commitment to implementing additional conditions under the extended (big bang) conditionality at an agreed date. *Less is more*: (too) many program conditions may produce worse results than fewer conditions in inducing program ownership. If ownership has a strong bearing on program success, then streamlining reform and other program conditionality may ensure greater program success. Thus, to the extent feasible, a flexible approach by the program sponsor of streamlining program conditions (along with making the gradualist option available to the policymaker) may at least help initiate a desirable program.[13] If the program sponsor insists on more conditions and on the less flexible big-bang approach, the policymaker may reject, at least implicitly, some conditions in the program package and violate some program commitments.

IMF programs recognize the value of flexibility, as illustrated in many program cases in which the IMF Executive Board has provided dispensations from some program conditions. In fact, the IMF may have been criticized more for being flexible—which might invite moral hazard—than for being inflexible in its approach to program conditionality. The IMF specializes working in ambiguity, which is more present in some countries than in others, reflecting their level of economic, political, and social development; their institutional capacities; the extent of their natural and human resources; their customs of doing business; and so on. IMF conditionality and programs incorporate all those considerations, often in subtle ways. Intricacies of the IMF's approach to program design for a country in specific and its current inclination toward streamlining conditionality in general cannot be fully captured by a highly stylized model like the present one. However, this paper provides analytical support for streamlining IMF conditionality through a novel approach to decision theory, which may be useful to both the firefighters and the firewatchers.

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[13] This point was emphasized by Lian and Wei (1998) and Erbaş (2002a).

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