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ABSORPTIVE CAPACITY IN THE SAHEL COUNTRIES

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Absorptive Capacity in the Sahel Countries

This report was prepared by Elliot Berg. Andrew G. Berg drafted the Literature Survey, Annex III. Mark Lundell assisted with the preparation of Annex II, the Aid Pipeline.

NOTE

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Le lecteur trouvera aux pages vii à xi la traduction en français du Sommaire et des Conclusions de cette étude.

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SUMMARY AND CONCLUSIONS

In a 1981 report, the Inspector General of the United States Agency for International Development questioned the ability of the Sahel countries to effectively utilize development assistance at current levels. The report called for "...a study to determine optimum levels of financial and technical assistance required for realistic Sahel development."

This paper has its origin in that recommendation. It explores the literature on the subject to see what content has been given to the concept of absorptive capacity. (An extensive literature survey is appended as an Annex to the report). This is important since a study, such as that proposed by the Inspector General's report, will only be worthwhile if absorptive capacity can be defined and measured in an operational way.

Three main questions are addressed here.

(1) Is it possible, theoretically and in practice, to define and measure "optimum levels of financial and technical support that can be effectively utilized by the Sahelian states?"

(2) What are the actual constraints to effective utilization of assistance?

(3) How can these constraints be relaxed?

The answer to the first question is unambiguous: there is no way to define and quantify a level of assistance that is "optimal" or that can be "effectively utilized". The theoretical literature offers very little help on this score; a quarter century of writing on the subject has led to no consensus on the definition of the concept of absorptive capacity, and no way of measuring it that is both theoretically valid and feasible in terms of data generation. Similarly, there is no definable limit on the volume of aid that can be effectively utilized. For we are concerned with foreign assistance in all forms and not (as in most of the academic writing) with investment projects alone, especially directly-productive projects. Thus, assistance for health, schooling, institution-building can be absorbed in even greater volumes than at present. And the "effectiveness of non-project assistance" can be great though not measurable; massive budget support can save governments and induce basic

policy reforms - certainly "effective" results. Limits on aid in the form of budget support are not readily determined. And perhaps most important, even the capacity to effectively use project aid can be increased by better policies on the host country side and more flexible assistance on the donor side. There's not much to be gained, therefore, in trying to specify some quantity of assistance that can be "effectively utilized" without considering at the same time its forms and the policy changes on both sides that could make it more effective.

This is not to say that externally-financed development spending in the Sahel has been without problems. Difficulties of project design and implementation as well as other shortcomings are widespread. A study of these difficulties could be profitable. But looking at these deficiencies in an absorptive capacity context is not a promising way to study them. It is more helpful to address the second and third questions mentioned above: defining the specific constraints to effective aid utilization and investigating ways to relax these constraints.

In the second part of this report, the limits to absorptive capacity (the constraints to effective utilization of aid) are summarized. The main problems can be listed as follows.

Structural Factors. The physical environment, resource endowments, market size and similar factors impose obvious limits on production potentials.

Knowledge Gaps. Trained and experienced people are few and the research base is small. Technical packages in agriculture are especially thin. At the same time, knowledge-generating institutions are weak, and procedures or institutions for using that knowledge are also underdeveloped. Moreover, these deficiencies can only be met imperfectly by resort to technical assistance because of recruitment difficulties and diseconomies of scale in utilization of technical assistance people.

Weak Administrative Capacity. Absorptive capacity of public sector institutions (until now the channel for almost all official development assistance) is limited by weak administrative capacities. Scarcity of trained people, deficient salary and personnel systems, slow and uncertain budget processes, cumbersome financial procedures, and poorly developed economic decision-making institutions all contribute to reduced capacities for using public development resources.

Fiscal Constraints. Budget resources are scarce,

especially for non-salary items. Foreign aid inflows can be constrained by the difficulties of finding "counterpart" financing from local revenues. Also, financing recurrent costs of completed projects can be a major problem. And underdeveloped budgetary and financial systems make it very hard to administer user fee arrangements.

Balance of Payments Constraints. Even when capital assistance is in grant form, import-dependent facilities result. Unless domestic investment and/or aid-financed projects generate additional foreign exchange, directly or indirectly, unsustainable facilities will have been created.

Donor Practices. Donor restrictions regarding local cost contributions, recurrent cost financing, and cost overruns impose limits on inflows of assistance. Also, donors compete for good local people and projects, creating a negative impact. In addition, donors have responded slowly to the lessons of experience, particularly in agricultural project design.

These sources of absorptive capacity constraints are well-known, and what to do about them is equally well-known. Major avenues of action are open to donors. They can change the aid mix, giving greater weight to non-project assistance, to rehabilitation projects, or to maintenance and repair expenditures. This implies greater willingness to finance local and recurrent costs and acceptance of in-kind payments for local counterpart financing. Donors can make their project preparation process a more serious enterprise, particularly for directly productive agricultural projects. More careful and intensive project-focused research is needed if better projects are to come about. Formal project life should also be lengthened beyond the now-normal five year period to allow for more cautious beginnings and closer attention to training needs. In designing projects, more realistic assumptions are needed regarding availability of skilled people. Longer-term factors (e.g., institution-building) should be weighted more heavily, technical assistance strategies shifted in favor of more short-term specialists, and project designers should be encouraged to change those instincts and habits which lead them to formulate public sector solutions for all problems.

Donors can do much more. They can coordinate their activities better. An appropriate vehicle for bilateral coordination is the sectoral joint committee, bringing together donor and local technicians for sustained dialogue on the country level. Donors can also, if they so wish, override some absorptive capacity constraints directly. They can, for example, build facilities (roads, buildings,

etc.) in ways that will reduce maintenance demands in the future. They can also undertake enclave-type programs to attack critical bottlenecks - for example, in agricultural research and in disease control. And they can make sure that they don't create recurrent cost problems for local governments by insisting on premature local absorption of recurrent costs, thereby inducing the financing of failed experiments.

The emphasis in this report is on donor actions to increase aid effectiveness in the Sahel. This is only proper, since the question of "absorbability" of aid is raised by donors. But there are, of course, actions to be taken by Sahelian governments which are critical in making aid more effective and increasing absorptive capacity.

The Sahel authorities can move economic development and growth higher up in their scale of priorities by giving economic efficiency in resource use greater weight. They must strengthen their project generating (research) capacities, their central expenditure screening institutions (Planning and Finance Ministries), and their procedures for evaluation and control of expenditures. They must also widen the use of policy analysis in economic decision-making.

In addition, governments will have to address the problem of their overburdened public sector institutions. Load-shedding is in order, giving the non-government economic agents (especially the indigenous private sector) a larger role in the development process. And finally, governments will sooner or later have to face the issue of extending user fees, thereby making beneficiaries of public services pay a larger share of their cost.

Some of these actions require great political courage. But their potential pay-off is also great.

RESUME ET CONCLUSIONS

Dans un rapport daté de 1981, l'Inspecteur Général de l'Agence des Etats-Unis pour le Développement International met en doute la capacité des pays du Sahel à utiliser efficacement l'aide au développement au niveau auquel elle s'élève actuellement. Le rapport recommande que l'on fasse une "étude en vue de déterminer le niveau optimal d'aide financière et technique requis pour permettre un développement réaliste du Sahel".

La présente note a été rédigée pour répondre à cette recommandation. Elle étudie les documents relatifs à cette question pour connaître le contenu donné au concept de la capacité d'absorption. (Une analyse exhaustive de cette documentation figure en annexe à ce rapport.) Ce point est important, dans la mesure où une étude telle que celle qui est envisagée par le rapport de l'Inspecteur Général ne sera valable que si l'on peut définir et mesurer de façon opérationnelle cette capacité d'absorption.

Nous abordons ci-dessous trois questions principales :

(1) Est-il possible, en théorie comme en pratique, de définir et de mesurer "le niveau optimal de soutien financier et technique susceptible d'être efficacement utilisé par les Etats du Sahel" ?

(2) Quelles sont les contraintes réelles entravant l'utilisation efficace de l'aide ?

(3) Comment peut-on assouplir ces contraintes ?

On peut répondre sans ambiguïté à la première question de la façon suivante : il n'existe aucun moyen de définir et de quantifier un niveau d'aide qui soit "optimal" ou qui puisse être "utilisé efficacement". A cet égard, les documents théoriques dont on dispose n'offrent qu'un recours très limité ; et les rapports qui ont été rédigés depuis un quart de siècle à ce sujet n'ont pas permis d'atteindre un consensus sur la définition du concept de la capacité d'absorption, ni de découvrir une approche permettant de la mesurer, qui soit à la fois valable sur le plan théorique, et réalisable en termes de production de données. De même, il n'existe aucune limite définissable du volume d'aide susceptible d'être utilisé avec efficacité. En effet, nous nous

préoccupons de l'aide étrangère sous toutes ses formes, et non pas uniquement (comme dans la plupart des documents académiques), de projets d'investissement, notamment les projets directement productifs. Ainsi, dans les domaines de la santé, de l'enseignement et de l'appui institutionnel, des montants d'aide encore plus importants que ceux qui sont accordés actuellement pourraient être absorbés. L'"efficacité de l'aide hors projets" peut donc être importante, sans toutefois pouvoir être quantifiée. Une aide budgétaire massive peut sauver des gouvernements tout en suscitant des réformes fondamentales de politiques - qui constituent certainement des résultats "efficaces". Il n'est pas facile de déterminer les limites de l'aide que l'on peut apporter sous forme de soutien budgétaire. Il est peut-être encore plus important de souligner que l'on peut même accroître la capacité d'utiliser de façon efficace l'aide destinée à des projets, si le pays hôte mène des politiques plus appropriées et si le donneur assouplit les modalités de l'aide. En conséquence, il n'est pas réellement très utile de chercher à déterminer un montant d'aide spécifique, susceptible d'être "utilisé efficacement", sans examiner simultanément les formes d'aide, ainsi que les modifications des politiques qu'il faudra introduire chez les deux partenaires en cause pour rendre l'aide plus efficace.

Ceci ne signifie pas que les dépenses de développement financées de l'extérieur aient été réalisées dans le Sahel sans rencontrer de difficultés. La conception et la mise en oeuvre des projets soulèvent en effet des problèmes, et les insuffisances sont fréquentes. L'examen de ces difficultés peut être fructueux. Cependant, si l'on cherche à examiner ces insuffisances dans un contexte de capacité d'absorption, leur étude risque de ne pas s'avérer fructueuse. Il est plus utile d'aborder la deuxième et la troisième questions mentionnées précédemment, qui concernent la définition des contraintes spécifiques entravant l'utilisation efficace de l'aide, et la recherche des moyens permettant d'assouplir ces contraintes.

Dans sa seconde partie, le présent document résume les limites de la capacité d'absorption (les contraintes pesant sur l'utilisation efficace de l'aide). Les principaux problèmes à ce sujet peuvent se traduire dans les termes suivants :

Facteurs structurels. L'environnement physique, les ressources, l'importance du marché, et d'autres facteurs similaires, imposent des limites évidentes au potentiel de production.

Manque de connaissances. Les personnes formées et expérimentées ne se trouvent qu'en nombre limité, et la base de recherche est restreinte. Les ensembles d'informations techniques disponibles concernant l'agriculture sont particulièrement peu

élaborés. En outre, on peut souligner la faiblesse des institutions permettant d'utiliser ces connaissances. Car ailleurs, ces insuffisances ne peuvent être que partiellement compensées par le recours à l'aide technique, en raison des problèmes de recrutement et des déséconomies d'échelle résultant de l'utilisation de personnel d'assistance technique.

Faiblesse de la capacité administrative. La capacité d'absorption des institutions du secteur public (qui ont servi jusqu'à présent à canaliser presque toute l'aide officielle au développement) est limitée par la faiblesse de l'administration. Le manque de personnel compétent, l'insuffisance des systèmes des salaires et du personnel, la lenteur et l'incertitude des processus budgétaires, la lourdeur des procédures financières, et le développement insuffisant des institutions responsables de la prise de décisions en matière économique, contribuent à limiter les possibilités d'utiliser les ressources destinées au développement.

Contraintes fiscales. La rareté des ressources budgétaires affecte notamment les facteurs non-salariaux. Les apports d'aide étrangère peuvent être freinés par la difficulté de trouver un financement "en contrepartie" provenant de revenus locaux. En outre, le financement des coûts récurrents des projets terminés peut poser un problème majeur. Le développement insuffisant des systèmes budgétaire et financier rend très difficile la gestion des redevances par les utilisateurs.

Contraintes relatives à la balance des paiements. Même si les apports de capitaux revêtent la forme de dons, il en résulte toujours certaines facilités dépendantes des importations. Si les investissements nationaux et/ou les projets financés par l'aide n'engendrent pas de devises étrangères supplémentaires, de façon directe ou indirecte, il en résultera la mise en place de facilités qui ne pourront être maintenues.

Pratiques suivies par les donateurs. Les restrictions imposées par les donateurs vis-à-vis des contributions aux coûts locaux, du financement des coûts récurrents, et du dépassement des coûts, imposent des limites aux flux d'aide. En outre, les donateurs se font concurrence pour obtenir le personnel compétent et les projets valables, créant ainsi un effet négatif. De plus, les donateurs ont réagi lentement aux leçons retirées de l'expérience, notamment en ce qui concerne la conception des projets dans le secteur de l'agriculture.

Ces sources de contraintes pesant sur la capacité d'absorption sont très connues, et l'on sait également comment agir à cet égard. Divers modes d'action importants s'offrent au choix des donateurs. Ils peuvent modifier la répartition de l'aide en accor-

dant une plus grande importance à l'aide hors-projets, à des projets de remise en état, ou aux dépenses d'entretien ou de réparation. Ceci implique que les donateurs acceptent de financer davantage les coûts locaux et récurrents, et d'accepter des paiements en nature à titre de contrepartie locale. Les donateurs peuvent accorder plus d'attention au processus de préparation des projets, notamment en ce qui concerne les projets agricoles directement productifs. Il est nécessaire de mener plus soigneusement et plus intensivement la recherche concernant les projets si l'on veut en améliorer la qualité. La durée officielle d'un projet devrait également être prolongée au-delà de la période de cinq années, qui est actuellement considérée comme normale, en vue de permettre des débuts plus prudents et d'examiner plus attentivement les besoins dans le domaine de la formation. Lors de la conception des projets, il faut établir des hypothèses plus réalistes en évaluant la disponibilité du personnel compétent. Il faudrait encore accorder plus d'importance aux facteurs à plus long terme (comme par exemple l'appui institutionnel), rendre les stratégies d'assistance technique plus favorables à l'emploi de spécialistes à court terme, et inciter ceux qui sont chargés de la conception des projets à modifier les instincts et les habitudes qui les poussent à formuler pour tous les problèmes des solutions émanant du secteur public.

Les donateurs peuvent faire bien davantage encore. Ils peuvent améliorer la coordination de leurs activités. Le Comité mixte constitue un véhicule approprié pour la coordination bilatérale, en permettant aux donateurs et aux techniciens locaux de mener un dialogue continu au niveau national. En outre, les donateurs peuvent, s'ils le souhaitent, surmonter directement certaines contraintes relatives à la capacité d'absorption. Ainsi, par exemple, ils peuvent entreprendre des travaux (routes, immeubles, etc.) en cherchant à réduire les besoins futurs d'entretien. Ils peuvent également entreprendre des "programmes-enclaves" en vue de s'attaquer à des goulots d'étranglement critiques - par exemple, dans la recherche agricole et la lutte contre les maladies. Ils peuvent s'assurer qu'ils ne créent pas de problèmes de charges récurrentes aux gouvernements nationaux en insistant sur la prise en charge locale prématurée des coûts récurrents, et en induisant ainsi le financement d'expériences manquées.

Ce rapport met l'accent sur les interventions des donateurs destinées à améliorer l'efficacité de l'aide dans le Sahel. Ceci est tout à fait normal, dans la mesure où la question "d'absorbabilité" de l'aide est soulevée par les donateurs. Bien entendu, il existe néanmoins des mesures que les gouvernements des Etats sahéliens peuvent prendre et qui sont d'une importance cruciale pour rendre l'aide plus efficace et pour accroître la capacité d'absorption.

Les autorités sahéliennes peuvent élever le développement et la croissance économiques au rang de leurs plus hautes priorités en mettant davantage l'accent sur l'efficacité économique dans l'utilisation des ressources. Elles doivent renforcer leurs capacités (la recherche) génératrices de projets, leurs institutions chargées de l'examen des dépenses centrales (Ministères des Finances et du Plan), et leurs procédures d'évaluation et de contrôle des dépenses. Elles doivent également élargir l'utilisation de l'analyse des politiques dans la prise des décisions en matière économique.

En outre, les gouvernements devront aborder le problème des institutions du secteur public, actuellement surchargées. On les allègera en attribuant aux agents économiques non-gouvernementaux (notamment le secteur privé indigène) un rôle plus important dans le processus du développement. Enfin, à plus ou moins brève échéance, les gouvernements devront faire face à la question de l'augmentation des redevances par l'utilisateur, en faisant payer par conséquent aux bénéficiaires des services publics une partie plus importante de leur coût.

Parmi ces mesures, certaines exigent un courage politique considérable ; toutefois, leurs avantages potentiels sont tout aussi considérables.

ABSORPTIVE CAPACITY IN THE SAHEL COUNTRIES

INTRODUCTION

This study addresses the question of absorptive capacity with special reference to the Sahel countries. As noted in the Terms of Reference (Annex I), the motivation for the study comes from a report of the Inspector General of the United States Agency for International Development, in which questions were raised concerning the ability of the Sahel countries to effectively utilize development assistance at current levels ^{1/}. The report raised the following questions:

- What are the optimum levels of financial and technical support that can be effectively utilized by the Sahelian states?

- What are the specific constraints to effective utilization of the assistance?

- How can the constraints be relaxed?

These are the central questions we are asked to address in this report. And the Terms of Reference state that we

^{1/} Audit Report No. 0-625-81-52, dated March 10, 1981, and entitled "Improvements Must be Made in the Sahel Regional Development Program."

should also analyze the concept of absorptive capacity, including its definition and its relevance for the Sahel, based on the existing literature on the subject. These questions and the analytic issues implicit in them are of central importance in assessing the Inspector General's recommendation calling for "...performance of a study to determine optimum levels of financial and technical assistance required for realistic Sahel development." Only if absorptive capacity can be defined and measured in an operationally relevant way would such a study be worthwhile.

This report is structured as follows. In Part I the conceptual problems bearing on definition and measurement of absorptive capacity are discussed. Part II is a summary of the constraints to effective use of aid resources, particularly in the Sahel. Part III is an exploration of ways that donors can override or reduce these constraints. Part IV briefly sets out required Sahel government actions. Annex I reproduces the Terms of Reference. Annex II addresses the "aid pipeline" problem. Annex III is a survey of the literature. And Annex IV is a bibliography of major works, with annotation.

I. THE CONCEPT OF ABSORPTIVE CAPACITY

The notion of absorptive capacity emerged at about the same time as modern development economics itself in the immediate post-World War II period ^{1/}. The 1948-49 Report of the World Bank stated that the most striking lesson that the Bank had learned in the course of its work was how limited a capacity underdeveloped countries have to absorb capital rapidly and productively ^{2/}. This practitioner's lament became one of the recurring refrains of the next three decades, at least in donor circles: "good" or "sound" projects are hard to find.

Sparsity of good projects is one of the common symptoms of absorptive capacity problems. Others are equally familiar: long lags between project signing and execution, clogged aid pipelines as indicated by increases in the gap between commitments and disbursements, donor competition for local staff and for uncommitted budget resources, and collapse of aided projects after termination of external contributions. These are signals of system overload, indications that outlets for productive expenditures are limited, so that the country in

^{1/} The post-Keynesian literature on the "stagnation thesis" in industrialized countries contains references to absorptive capacity. But its meaning in this context was synonymous with "investment opportunities". The main intellectual development of the concept occurred in the framework of discussions on aid to poor countries. See, for an excellent survey of the literature, P. Guillaumont, L'absorption du capital, Editions de Cujas, Paris, 1971, pp. 16 ff., and W.J. Stevens, Capital Absorptive Capacity in Developing Countries, A.W. Sijthoff, Leiden, Netherlands, 1971, Chapter II.

^{2/} IBRD, Fourth Annual Report, 1948-1949, p. 8.

question can't usefully spend all the financial resources it might have at hand.

That many countries - especially the least developed - face significant absorptive capacity constraints is certainly a plausible inference from the prevalence of these kinds of gross indicators ^{1/}. And that there are short-run limits to the amount of capital or other resources that can be used productively in any economy is intuitively congenial in theory, as well as being in accord with the everyday experience of most practitioners. So, clearly there is something to the idea of "limited absorptive capacity". Like many apparently simple notions, however, this one strongly resists attempts at analytic refinement. We know in a rough way that absorptive capacity constraints exist, but great difficulties emerge when we try to define the concept precisely or try to measure it in a way useful to policy-makers.

A. Definitions: "Partial" and Macroeconomic

The analytic literature reveals two kinds of approaches to the absorptive capacity concept. The first, and most common, analyzes it from a "partial" or microeconomic perspec-

^{1/} The problem of accumulated aid commitments and slow rates of disbursement - the "pipeline" problem - is given heavy emphasis in the Inspector General's Report. In fact, the size of an aid pipeline, or a downward shift in the ratio of disbursements to commitments, is an uncertain indicator of absorptive capacity problems. Among other inadequacies, conclusions depend on what is a "normal" or standard rate of disbursement in developing areas as a whole. It appears that the Sahel countries' ratios of disbursements to commitments are not out of line with those in other regions. Also, later and better data on aid flows give downward revisions in pipeline figures for the mid-1970's. These matters are considered in greater detail in Annex II.

tive: absorptive capacity is defined with reference to a cut-off rate of return on capital investment. It is a point on a schedule (or curve) with the rate of return on the vertical axis and the volume of investment on the horizontal (see Annex III, Figure 1). The curve is downward sloping, i.e., the rate of return to investment falls as the amount of investment increases. This shows the result of adding additional units of capital investment with everything else (physical resources, labor supply, technology, etc.) held constant.

Discussion of the definition of absorptive capacity thus conceived has swirled around such questions as the shape of the curve (for example, is it smoothly falling or does it have a corner which would indicate a sharp fall in rates of return once a certain volume of investment takes place), the elasticity of supply of cooperant factors, whether the input being measured is foreign aid or total capital investment, whether one can properly speak of "overall" limits to absorptive capacity or only sectoral limits, and the determinants of the cut-off rate of return (e.g., whether one can speak of absorptive capacity constraints so long as there is a positive rate of return to the capital input in question ^{1/}). These questions are discussed in the literature survey (Annex III) and need not be considered here.

^{1/} Cf. John Adler, Absorptive Capacity: The Concept and Its Determinants, Washington, The Brookings Institution, 1965, p. 4. Paul Rosenstein-Rodan, "International Aid for Underdeveloped Countries" in The Review of Economics and Statistics, May 1961, p. 108. Charles P. Kindleberger, Economic Development, New York, 2nd edition, 1965, pp. 325-26.

The second definition is more "macro" or aggregative. This is, in fact, the most common approach in the literature. There are two main variants. Many writers focus on the incremental capital-output ratio and define absorptive capacity as the amount of investment possible in a given period without raising the ICOR above some specified level. In effect, this definition transforms the partial (or "Adlerian") rate of return schedule from project to economy-wide levels. While the "partial" approach looks at projects and their cut-off rate of return, this macro approach looks at total investment in a given time period.

The second macro variant is essentially historical; it is based on past performance of macroeconomic aggregates. Absorptive capacity in this view is defined as the highest possible past rate of increase of investment. Thus, Hollis Chenery notes:

...there is substantial evidence of a limit to the ability of developing countries to transform large increases in external resources into productive investment. The most convenient measure of this absorptive capacity limit is the rate of increase in investment which a country can achieve on a sustained basis... Rates of 15-20% per year have been observed in a number of countries, but there has been no case of a higher value over any substantial period... 1/

These macro approaches directly link definition to measurement. A country can absorb a level of investment based on past rates of growth of investment, or it can ab-

1/ H. Chenery and A. MacEwan, "Optimal Patterns of Growth and Aid: The Case of Pakistan" in The Theory and Design of Economic Development, Irma Adelman and Erik Thorbecke (eds.), Baltimore, Johns Hopkins University, 1966, pp. 151-52.

sorb a level of investment producing an ICOR of $1/x$, where x is the cut-off level of productivity of capital. Since these macro approaches rest on general concepts such as the incremental capital-output ratio, and on analytic devices such as the two-gap models of Hollis Chenery and his collaborators, the discussion has necessarily involved the utility or applicability of these general concepts and models as Annex III shows. Many of these issues are not immediately relevant here. What is relevant is whether any of the definitions in the existing body of writing is "operational" in the sense of providing guidance to policy-makers in the Sahel (or elsewhere) about: 1) "optimal" levels of investment, and 2) "optimal" or maximum levels of foreign economic assistance. The answer to this question must be "no". We consider first the deficiencies of the "partial" approaches, then those of the macro analyses.

B. Definitional Inadequacies and Problems of Measurement

Analytic writing about absorptive capacity has led to a dead end. It has proved impossible to find a definition that is at once theoretically acceptable and relevant to policy-makers. Also, the problem of finding measurements that can provide guidance for policy has so far defied solution. Much of the detailed argument behind these assertions is found in the literature survey included as Annex III. Here the major deficiencies will be considered.

1. The "Partial" Approach

What we have called the "partial approach", which rests

on the notion of an "acceptable" rate of return, defines absorptive capacity in terms of a diminishing rate of return on investment on the assumption that aggregate or macroeconomic variables are held constant. But the investment schedule is not independent of the size and nature of the country's overall investment program. A larger program can not only shift the investment schedule outward (make rates of return higher for all investments), but can also change its shape (e.g., push a bigger proportion of projects above the posited cut-off rate of return). What this means is that absorptive capacity, as defined in much of the literature, is indeterminate. We can't measure a country's absorptive capacity by adding up the cost of all projects with an "acceptable" rate of return, since the total is itself a function of the size of the program.

This fundamental theoretical weakness is magnified by further elements of indeterminacy. Absorptive capacity, defined and measured as the total cost of an investment program comprising all projects with "acceptable" rates of return, depends on many other factors which cannot appropriately be held constant. Thus, for example, every development program contains some prestige expenditure, political item, or poorly studied projects. Reducing the share of these low productivity expenditures will increase the absorptive capacity of any economy. Similarly, the policy framework can be changed, with dramatic effects on project rates of return. It is now well-understood that better investment policies will sharply increase the productivity of investments in key sectors.

Since foreign aid can be - and nowadays is - aimed at smoothing the way for such policy changes, the size and nature of the aid inflow will itself change the absorptive capacity of the aided economy.

If it is capacity to absorb foreign aid that is at issue, this last point is critical and, moreover, obvious. The total volume of resources absorbable in any Sahelian country, for example, can be increased by donors changing the terms of their aid to more soft lending, less tying, more program aid, more support for local and recurrent costs, and more donor coordination. So, it is not possible to specify a ceiling on aid inflows without addressing these constraints arising on the donor side.

Special problems of measurement limit the operational relevance of the concept of absorptive capacity. In "partial" approaches, for example, a massive exercise in project evaluation is required. As Adler notes, proper estimate of absorptive capacity "... must include the properly evaluated benefits earned by all beneficiares ..." ^{1/}. This means that all secondary effects have to be calculated as do all complementarities between projects. Stevens spells out what is required to determine the aggregative absorptive capacity of an economy over a given period: ^{2/}

- identification of all investment opportunities which, given the stock of productive factors which are in fixed supply, could be carved out with an acceptable prospective rate of return;

^{1/} Adler, op. cit., p.8.

^{2/} Stevens, op. cit., p.47.

- calculation of "national financial profitability", which must take into account all financial costs and benefits, including external effects over the life of the projects;
- use of shadow prices for inputs and outputs where appropriate;
- discounting of all future costs and benefits;
- finally, "cumulative net present value" has to be calculated. When this figure is zero, or some specified cut-off point above zero, absorptive capacity has been reached.

What is really needed, then, is a full-scale dynamic programming model for the economy as a whole, built on the basis of specific projects. No such model has ever been put together, anywhere.

Even if such a model were constructed, the resulting estimate of absorptive capacity would have such large margins of error that it would possess little credibility. First of all, in no country (even those more developed than the Sahelian countries) do planners ever have before them a full array of fully-evaluated projects in an investment program. They usually have detailed cost-benefit studies for only a few at any one time. The rest are sketchily analyzed; many are only project ideas to be studied as the investment program unfolds. Moreover, rarely would shadow prices be used for all projects, and if they were used, this would necessarily bring into the evaluation process much arbitrary judgment. Furthermore, the profitability of productive projects may depend on future prices in external markets, which are

highly volatile. This injects another element of uncertainty into any quantitative assessment of absorptive capacity.

There are many projects for which rate of return calculations are especially difficult or inappropriate: in health, education, training, institution-building, studies, and administrative buildings. It is not clear how these projects, which can involve both capital investment and non-capital costs, fit into a "cut-off rate of return"-based definition of absorptive capacity.

It is impossible to arrive at an objective, generally accepted rate of return, to provide the cut-off point and hence define absorptive capacity in the "partial" approaches. The literature of the 1960's came to no consensus on this critical question.

There is a related ambiguity in the concept: its relevance depends on what is being "absorbed". Is it "investment" in the national accounting sense, which means all brick and mortar, including such items as military barracks, sports stadia, and administrative buildings? Or is the relevant concept that of development expenditure, which usually is defined pragmatically, to include development-related operating items? Is the issue how much foreign aid can be absorbed, as it is framed in the Accountant-General's audit and in some of the analytic literature? ^{1/} In this case, as noted earlier, limits on absorptive capacity depends very heavily on the terms of aid. In any case, most of the academic literature

^{1/} Ester Boserup and Ignacy Sachs, Eds., Foreign Aid to Newly-Independent Countries: Problems and Orientations, The Hague, 1971. (See Annex IV A).

has focused on domestic, real determinants of absorptive capacity. Practitioners have tended to the view that whatever the "real" determinants are, foreign aid can be increased from present levels by adjusting terms of assistance. They also say that aid can override absorptive capacity constraints by financing the import of factors in short supply. The important point here is the impossibility of putting any precise analytic or empirical content into the concept of absorptive capacity without greater precision in the definition of the inputs concerned. If it is absorption of foreign aid that is the question, then it is clearly impossible to define a limit to aid inflows without discussing conditions attached to its use.

2. Macroeconomic Approaches

We have thus far focused on deficiencies in the "partial" approach. Many of the same points apply to the more aggregative approaches though these have some advantages. For example, the use of incremental capital-output ratios to determine cut-off rates of investment and hence, define absorptive capacity, certainly seems more operational. But severe problems plague these approaches also. ^{1/}

The first is the questionable analytic relevance of capital-output ratios, an old issue among students of development. Fifteen years ago Paul Streeten came to the following conclusion after an intensive look at the concept of the capital-

^{1/} See Annex III for a more extensive discussion of individual writers' views.

output ratio and its use in planning models ^{1/}.

In the light of these difficulties and ambiguities, it is apparent that the "capital-output ratio" can be of no assistance to the planner in deciding where, when, how and how much to invest ... If sectoral capital-output ratios were meaningful and calculable, aggregate ratios would be unnecessary; if sectoral ratios are not known, aggregate ratios cannot be known. The ratio is thus either unnecessary or impossible to calculate ...

Even if the fundamental deficiencies were less severe, other problems would remain. For example, what is an "acceptable" ICOR? There is no agreement on this in the literature, nor is any objective determination possible. Also, the "what is being absorbed" question is central: foreign aid will change savings rates and reduce constraints that have raised capital-output ratios in the past. More generally, past capital-output ratios are not dependable guides to future productivity of investment. This depends on the specific pattern of investment, on policies, and on other factors. Hence, the ICORs provide no reliable basis for an estimate of absorptive capacity.

The other main macroeconomic measure of absorptive capacity, the historical record of rates of increase of investment, suffers from two fundamental flaws.

- It pays no attention to the productivity of investment, but looks only at how fast investment has increased in the

^{1/} Paul Streeten, "Economic Models and Their Usefulness for Planning in South Asia" in G. Myrdal, Asian Drama, Vol. III, Appendix 3, Pantheon Edition, Random House, New York, 1968. pp. 1068-2004.

past 1/.

• It can change radically, as recent oil-country experiences indicate, or indeed as evidence from the Sahel shows. Foreign aid in the Sahel countries increased, of course, at rates far exceeding anything known in the past. And, with reference to capital investment, Niger's post-uranium experience was entirely unpredictable.

The conclusion from this analysis is that the concept of absorptive capacity remains an analytic will-o-the-wisp. It escapes theoretically precise definition. Its precise

1/ This approach is identified mainly with the work of Hollis Chenery, who uses as his definition of absorptive capacity "the highest compound rate of growth of investment for any five year period in the past decade". But he notes: "... the absolute limit on absorptive capacity (in his model) is somewhat arbitrary. It implies that no further investment can take place because of shortages of complementary inputs. It would probably be more realistic to assume that above this limit further investment can be carried out but only at higher capital-output ratios and with longer time lags ..." (Chenery and MacEwan, pp. 151-52). Chenery says this highly oversimplified method could be amended by using step functions, but it isn't clear how this would be done, nor whether credible empirical results are possible. For example, Millikan would make the capital-output ratio (K) rise as investment increases, since additional savings are being generated. (Chenery has a constant K for all rates of investment up to that rate marking absorptive capacity; K is infinite beyond that). But others would have K decline as rates of investment increase, on the ground of declining marginal productivity of capital. The problem is whether the dynamic effects would outweigh static diminishing productivity. Chenery's model, and related approaches, do not come to grips with this matter.

measurement is therefore impossible. Even if the definitions put forward in the literature were acceptable, measurement problems are overwhelming.

This is of special relevance for the question: What are the optimum levels of financial and technical support that can be effectively utilized by the Sahel countries? The response that follows from this discussion is that this question cannot begin to be answered without a full evaluation of the policies of both parties - donors and Sahel countries. There is no such thing as an "optimal level" of aid, nor is there a definable limit to aid that can be "effectively utilized". It depends on what we mean by "effective". Massive budget support can guarantee political stability and induce basic policy reforms. Limits on aid in the form of budget support are thus not readily determined. Even the capacity to absorb project aid can be increased by better policies on the host country side and more flexible terms of assistance on the donor side.

Nothing is to be gained, therefore, by undertaking a larger study aimed at determining "optimum levels of ... assistance ... for realistic Sahel development ...", as the A.I.D. Inspector-General's report proposes. Such a study could not come up with a hard figure or set of figures indicating how much aid is "optimal", since no such figure can be defined. Nor is it possible to determine future levels of assistance that can be "effectively utilized." Neither "optimal" nor "effectively utilizable" aid levels

can be specified without considering changes in aid modalities and in policies of both donors and host governments. A new study might focus on the bottlenecks to effective aid utilization and how to remove them. But, as is suggested below, quite a lot is already known about these matters.

II. CONSTRAINTS: THE SOURCES OF ABSORPTIVE CAPACITY LIMITS

In broad terms, the limits to absorptive capacity are quite well understood ^{1/}. But systematic discussions are hard to find, particularly in a context reflecting conditions in countries like those of the Sahel. For convenience, I group these constraints into seven categories.

A. Structural Factors

The physical environment sets some obvious limits on what can be done. Fragile soils low in organic content can yield output gains only at relatively heavy cost. And the productivity of investment in semi-arid areas with highly variable rainfall is likely to be low. Thinly-spread population in areas of large physical dimensions raises the cost of investment in infrastructure per person affected. Market size is a demand side constraint on import-substitution and, more generally, on production for the internal market. Silting potential or salinity effects may make irrigation investments especially costly or risky. Basic

^{1/}Cf., C.P. Kindleberger, op.cit., pp. 325ff. J Adler, op.cit., pp. 31-35. O.E.C.D., Development Co-operation Directorate, Measures to Increase the Absorptive Capacity of Developing Countries for Basic Needs: Relevant Development Programmes, Working Document, Mimeographed, Paris, September 29, 1977. L Gordon, "Aid Modalities in Bangladesh", paper prepared for the United Nations Conference on the Least Developed Countries, no date. J. Everts, "Aid Modalities in the Upper Volta", paper prepared for the United Nations Conference on the Least Developed Countries, Individual Country Review Meeting, May 25 - June 5, 1981.

inputs may be lacking for some lines of industry - coal and iron ore, for example.

B. Knowledge Gaps

Scarcity of knowledge is a key constraint, expressed in a variety of forms. Trained and experienced people are in short supply, especially for technical and managerial jobs. The Sahel countries' storehouse of accumulated knowledge is sparsely stocked - in technical agricultural research, for example, or land tenure arrangements, cadastral surveys, sunlight patterns, river flow data, or knowledge of farming systems. This kind of information is the raw material for development projects and policies, the basic units of action for development.

Especially critical for the Sahel is the slender technology available to increase productivity in the region's two major sectors: dryland farming and livestock production. The existing technology for improving agricultural productivity in semi-arid zones is very limited. Tested, viable packages for millet, sorghum, upland rice, and even irrigated rice are practically non-existent. In livestock, the landscape is littered with development projects that have failed, or, more charitably, experimental programs that have proved unworkable or uneconomic. At the same time, knowledge-generating institutions are weak in the region, and systems for the transmission of new technology and other information are poorly developed. Research entities are few, their staffs

are heavily expatriate and characterized by high turnover, and their research priorities are shifting and rarely subject to systematic analysis. Institutions for bringing economic analysis to bear on development decisions are few, thinly staffed, and often ignored by policy-makers. Procedures for utilization of existing knowledge are often inadequate.

It is commonly argued that needs for skill can be met, as are other needs in open economies, by importation. Some observers have therefore taken the position that absorptive capacity limits don't exist since everything, especially skills, can be imported ^{1/}.

The supply of technical assistance, however, is not perfectly elastic. In fact, its net contribution to production and to increases in productivity declines as its use expands. It is rare to be able to find the right person when he is needed. As demands increase, the pool of "good" people available at that time dries up quickly. The secondary technical assistance pool is of much lower suitability. And the presence of foreign technical assistance people, who alienate many local technicians and bureaucrats, reduces their commitment and productivity. Since these negative effects probably rise sharply as the density of expatriates increases, diseconomies of scale impose distinct limits on skill imports via technical assistance arrangements. It can be argued that this has not happened in the oil-rich skill-importing countries of the Middle East. Perhaps not.

^{1/}Kindleberger, op.cit., pp. 325-26.

But it tends to happen in the Sahel and other poor regions.

C. Administrative Capacities

The capacity to absorb financial and technical assistance normally refers to public sector capacity. In the foreign assistance context, the issue, implicitly, is: What restricts the productive use of official development assistance by governments? Among other implications, this means that the relevant channel is the public sector administrative machinery. This is not 100 percent true; some aid resources go to non-governmental bodies, such as private voluntary organizations, and some is on-lent by the public sector agencies to private firms or parastatal agencies. But in most cases - and this is so in the Sahel - ODA goes through and to public sectors.

Many complications follow. The public sector institutions that must select projects and programs and execute them face well-known problems in effectively executing their mandate. Trained, skilled people are scarce, especially technicians and managers. Their salaries are held back for budgetary reasons. The budget process itself is uncertain: allocations to non-salary recurrent costs are relatively small, and these are often deflected to higher priority needs when revenue shortfalls occur. The economic decision-making processes are not well-structured. Many projects are generated without careful study at the beginning, and without much

evaluation during project selection. Policy decisions are often made without benefit of systematic economic analysis and debate.

For these and many other reasons, the capacity to use public development resources is seriously impaired.

D. Fiscal Constraints

Limited budgetary resources and poorly developed tax and expenditure systems impose broad limits on capacity to use foreign assistance. In a resource-scarce budget system, everything except salaries - and often salaries too - tends to be sacrificed when revenue shortfalls occur. The capacity to adjust to uncertainties and to unanticipated events is severely reduced when the revenues are closely estimated and non-salary expenditures relatively small. Limited budgetary flexibility is typical of these fiscal systems for administrative reasons too: the machinery for effecting transfers, for example, is normally very heavy, and crisis-ridden governments frequently prohibit all transfers as a way to control expenditures. The result is to make the normal operations of government even more unwieldy.

Three aspects of the fiscal problem merit special mention here. First, the inflow of foreign assistance can be constrained by the need for "counterpart" expenditures. In the past, most donors required some share of the total costs of a foreign-funded project to be picked up by the local government. As we

will see below, there is a well-defined rationale for this requirement, and some donors still hold to it in the Sahel countries - the World Bank, for example. So it is a continuing constraint on absorption of external capital, though no longer a major one.

A second and more important limit is imposed by the need to pay for operating foreign aid programs and projects once the foreign funding ends. This is the well-known recurrent cost problem. It clearly limits investments or expenditures which impose "unabsorbable" expenditure demands on Sahelian governments.

A final fiscal constraint relates generally to the weakness of administrative and budgetary institutions. Charges for public services in the Sahel countries are too few or too low in many instances. If users of government facilities and services (vaccinations, schooling, etc.) paid more for them, then more services could be provided, and demand could be restrained so as to allocate the available supply in a more rational and equitable fashion. But the resort to user fees is severely restricted by the administrative problems inherent in organizing user fee arrangements ^{1/}.

^{1/}There are, of course, other even more important reasons why user charges are not more widespread. Ideological factors play a role: governments believe these services should be provided "free". Also, fragile governments are reluctant to risk the unpopularity that might follow attempts to introduce user charges.

E. External (Balance of Payments) Constraints

These constraints also limit aid inflows in several ways:

- If aid is not on grant terms, external debt obligations will be incurred. Debt service capacity thus constrains resort to external lending.

- Investment in general, and foreign capital assistance in particular, create import-dependent facilities: industrial enterprises depend on raw material and spare part imports; irrigation facilities depend on imported fuel and spares; medical facilities depend on imported pharmaceuticals, etc. Unless domestic investment and/or aid-financed programs generate additional foreign exchange directly or indirectly, the facilities created will not be sustainable - at least not without continuing external aid.

F. Donor Practices

Finally, donor practices are themselves the source of major constraints on aid absorption.

- Some donors insist that Sahelian governments pay for the local costs of development projects. The donor role, as they see it, is to finance off-shore costs. Strict adherence to this rule would surely restrict the volume of aid, since the local cost component would quickly impose serious budget burdens that would perhaps be unmanageable.

- Similarly, donors have been relectant (until recently) to finance recurrent costs of development projects and programs.

- The requirement for a "counterpart contribution" (a proportion of project costs paid by host governments) can reduce aid inflows.

- Some donors impose severe burdens on Sahel governments, by policies on cost overruns and cofinancing. Cost overruns on projects are in some instances made the responsibility of the host government, thereby raising local contributions and imposing unforeseen demands on local budgets. With respect to cofinancing, donors often leave to local officials the responsibility for putting together co-financed projects and overseeing their financial and physical execution - a task that is extremely demanding for local technicians.

- Donors collaborate relatively little with one another. They tend more frequently to be in a competitive posture - bidding for "good" projects, for "good" counterparts, and for uncommitted fiscal resources of the host government. Their impact on the internal cohesion of the host government can be particularly damaging: each donor makes arrangements with operating ministries, flanking the central screening agencies (Plan and Finance). Adherence to priorities and orderly allocation of available recurrent resources are thereby made difficult.

- Donors in the Sahel, as in Africa generally, are responsible for much of what is done in development projects. Almost all public investment in the Sahel is foreign-financed.

Donor ideas and approaches are therefore decisive in determining allocation of development resources. Yet, donor technicians sometimes fail to take account of the lessons of experience; they sometimes continue to generate, with local colleagues, project approaches with poor performance records. One example is the typical "integrated rural development" project in which a public sector agency monopolizes input sale and monopolizes output marketing, often via imposed peasant organizations ("cooperatives"). The persistence of this discredited institutional approach is at least in part the responsibility of donor agencies. One reason it persists is that neither donors nor their local counterparts have been able to devise good, new models. But institutional inertia - a tendency to keep doing what one does best - is also a factor.

III. DONOR ACTION TO LOOSEN ABSORPTIVE CAPACITY CONSTRAINTS

The absorptive capacity issue in the Sahel chiefly concerns foreign aid inflows: the central question is how to increase the effectiveness of aid utilization. The question can be put another way: how to increase the volume of aid that can be effectively utilized.

There is, first of all, a large and important set of actions that can be taken on donor initiative.

A. Changes in Aid Modalities

Most assistance to the Sahel is in the form of project aid. While this will, for various reasons, continue to be the case in the future, a shift to more non-project assistance would certainly increase absorptive capacity in the region. Non-project aid is in line with new donor ideas about the need for policy reform and dialogue ^{1/}. Assistance in such form can facilitate both dialogue and policy reform. It can also provide quick balance of payments assistance in cases where this is a critical factor, as it has in Senegal, for example.

Secondly, the project mix can and should be changed to give greater emphasis to rehabilitation programs and less

^{1/} Cf. World Bank, Accelerated Development in Sub-Saharan Africa, Chapter 8. EEC, Memorandum on the Community Development Policy, reprinted in The Courrier, #76, Nov.-Dec. 1982.

to new projects. In many instances, rates of return are higher for expenditure on maintenance and repair of existing road, irrigation, and other facilities than for new construction ^{1/}.

Related to this is the possibility to increase absorptive capacity by relaxing conventional aid restrictions.

In economic ministries in the Sahel, as elsewhere in Africa and in the developing world generally, one repeatedly hears three criticisms of aid modalities: (1) There is too much concern with off-shore costs and not enough with local costs; (2) Donors are too hesitant about financing recurrent or operating costs as against capital costs; (3) Recipient governments are too frequently obliged to cover cost overruns for which they are not primarily responsible. Recently, many donors have responded to these criticisms by adopting more flexible postures, though hesitations remain.

The volume of local-cost financing for projects, for example, has been growing in recent years; a survey of DAC members revealed that world-wide, local-cost financing averaged over 13 percent of gross disbursements in 1977. In the Sahel the proportion is undoubtedly higher; many donors now fund 100% of project costs. Donors in the Sahel have more or less abandoned the old objections to local-cost

^{1/} World Bank, Assistance for Road Maintenance, Washington, D.C., 1981.

financing: 1) that it is an inefficient way of providing balance-of-payments support (foreign exchange); and 2) that minimum local contributions to investment costs demonstrate a host country's "commitment" to carrying out the project in question. Donors now find the counter-arguments more persuasive: 1) that countries like those in the Sahel operate under severe budgetary and balance-of-payments constraints. The potential return to uncommitted public resources, foreign or local, is therefore very high, while returns to new capital expenditures are often less attractive; 2) that financially, politically, and organizationally, governments like those in the Sahel lack the flexibility required to reallocate local resources to high-yielding uses; 3) that to restrict aid inflows to capital flows overlooks the important distinction between "development expenditure" and capital expenditure; and 4) that to restrict aid to capital inflows encourages irrational and unproductive patterns of resource use (e.g., new buildings going up while old ones next door are falling apart for want of maintenance expenditure). In addition to these factors, shortages of local budget resources slow project execution and make it difficult for donors to achieve their resource transfer objectives unless they finance a high proportion of total project costs.

Financing of recurrent costs of development projects is

a closely-related issue. It is now acknowledged in the Sahel, as elsewhere, that shortages of operating funds lead to widespread underutilization of past investments and inadequate maintenance of existing capital stock. Vehicles and equipment frequently lie idle for lack of spare parts, repairs, gasoline, or other necessities. Schools lack operating funds for salaries and teaching materials, and agricultural research stations have difficulty keeping up field trials. Roads, public buildings, and processing facilities deteriorate from lack of maintenance.

As with the local-cost variant of this issue, Sahel donors now recognize that adequate external financing of recurrent costs may be necessary to ensure the successful completion, maintenance, and operation of development projects, and the expenditures along these lines frequently have higher yields than traditional capital projects. Donors remain concerned about guaranteeing a recipient's commitment to a project, about avoiding the undermining of domestic resource mobilization efforts, and about long-term dependency problems. But all donors active in the Sahel now recognize the desirability of flexibility on this matter ^{1/}.

^{1/}In recognition of the recurrent-cost problem and as a means of improving the flexibility of aid, DAC members in May 1979 approved guidelines on recurrent-cost financing. These guidelines specify that DAC members should provide recurrent-cost financing according to the merits of individual cases, taking into account such factors as: the overall financing capacity of the country; the nature and degree of the constraints faced by the recipient country in meeting recurrent costs from domestic resources for the project or program under consideration; the development impact to the project; and the jointly-assessed ability of the recipient to take on increasing shares of the

Thus, most accept the need to finance incremental recurrent costs during the construction phase of a capital project. Most also are willing to finance such costs after a project is completed while returns are still low. And high yields from road and other maintenance projects have legitimized recurrent spending on maintenance and rehabilitation. The World Bank Africa Report observes:

The difficult cases involve projects or sectors which are not directly productive, where no end to the need for recurrent-cost support can be foreseen. Rural development projects sometimes have this characteristic since they involve financing of operating costs of agricultural extension efforts. But it mainly concerns such sectors as health and education. Here donors could remain congenial to recurrent-cost financing over relatively long periods, in recognition of the long-term returns possible from these expenditures... 1/

It should be added that recurrent-expenditure financing for these sectors can be tied in with a policy reform and institution-building effort. Recurrent-cost financing can then raise absorptive capacity both directly and indirectly.

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recurrent costs of the project over time. The European Development Fund also adopted new rules in Lome IV, and further liberalization is indicated in the new memorandum on Community aid policy (see The Courier, Nov.-Dec. 1982).

1/ World Bank, Accelerated Development...

The reluctance of some donors to finance cost overruns in projects planned and implemented with their assistance is a problem that commonly arose in the past, but is now less prevalent. Donors justify their cautious attitude toward cost-overrun financing by pointing out that a blanket approval of overruns would undermine borrowers' determination to execute projects as economically as possible and might induce contractors to raise prices and propose costly modifications more readily, knowing that the foreign source of finance stands ready to pick up the extras. This argument has some force, and it suggests that no uniform policy is feasible. Who should pay for cost overruns has to be judged in light of the main contributing factors, on a case by case basis.

Thus, there are obviously some circumstances where donors are understandably reluctant to accept cost overruns, for example, where local implementing agencies insist on upgrading project standards without the full agreement of the lending agency, or where overstaffing may be involved. But there are many cases that are less clear. In the past these were sources of contention, but now donors are responding with greater flexibility ^{1/}.

^{1/} Cost overruns most frequently come from three sources. (a) Lags on the borrowers' side in meeting disbursement conditions delay project execution and result in higher-than-anticipated price increases due to inflation. Donors generally hold these extra costs to be the local governments' responsibility, though they often pay them when asked.

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B. Project Preparation and Implementation

Three aspects of the project process are especially relevant to absorptive capacity preoccupations: generation, phasing, and design including the role of technical assistance.

1. Project Generation

The availability, or rather non-availability, of "good" projects is at the heart of the absorptive capacity problem.

In donor circles there is a common tendency to believe that the flow of good projects can be substantially improved by better packaging - by creating fuller dossiers, ringing up rates of return data in the proper fashion, and paying closer attention to the bureaucratic requirements of aid agencies. One widely-drawn conclusion is that the way to ease the absorptive capacity constraint is to set up a project preparation facility, which will increase the production of good projects.

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(b) Inflation rates exceed those projected by the lender in the financing plan of the project. Since the lending agencies normally fix price contingencies, it is only reasonable that they provide the supplementary financing needed in these cases.

(c) Project design or technical specifications are changed in the course of execution. In many of these cases, changes are proposed by contractors or supervising engineering firms. If there's evidence of inadequate preparation work, the lending agency which has designed the project on the basis of such work should finance the resulting cost overruns. If the change in design is a response to problems revealed in the course of implementation, donor acceptance of these added costs also appears justifiable.

There's obviously something in this. For a significant share of public investment, external funding can be expanded if the rules of the game are followed. This is true of brick and mortar projects generally, especially roads. It is also true for programs in the social sectors (health, education, water supply, etc.). But the flow of directly productive projects, which have to be the centerpiece of development spending in the Sahel states, cannot be much expanded this way. Generating such projects is not simply a matter of better packaging. What is required, especially in rural development projects, is longer, more intensive pre-project research and analysis. The main difficulty in generating productive projects is that not enough location-specific technical knowledge is at hand. The intellectual raw material for good projects is wanting, and has to be created by the project itself or by highly-focused pre-project research.

From the donor point of view, this has two implications for project phasing. First, for productive projects, especially in agriculture, pre-project research should be a longer and more serious activity than it now is in most instances. And secondly, project planning should proceed as though the project will last longer than the "normal" period of about five years.

Donors must therefore strengthen the design of project preparation studies and supervise them more closely. The

idea that the design of immensely complicated projects (in rural development especially) can be turned over to consultants in the same way that one contracts out a problem in highway design has to be reexamined. More good projects will be ready for financing only when there has been a large expansion of project-focused research. In agriculture this might mean a thorough review of the agronomic evidence, farm systems research, comparative and pilot studies, a deeper involvement of both borrower and lender in the preparation process, and use of high-level consultants on short-term assignments. The need for more experimentation with new technical packages is nowadays widely recognized, and hence the need to give projects in this area a more explicitly "pilot" character.

2. Project Time Horizons

Projects should not only begin earlier, but should also proceed more slowly and their life lengthened. The development project is conceived by most donors as having a five year life cycle. This at least is the normal framework within which projects are conceived, planned, and financed. For "old-style" projects which were heavy on hardware - that is, on physical capital construction - this time frame was appropriate. But many key projects have become "softer" and more complex. This is especially evident in rural development projects, though nowadays even non-agricultural projects have

more institutional and training content. The result is that in many cases it is no simple matter to decide when a project terminates. It used to be easier: when a road enters into service, a school is occupied, or a power plant is working at capacity, the project's "end" can be said to be at hand. But when is an integrated rural development project "finished"? When is a technical assistance project in economic planning or management "completed"?

It is true that, increasingly, projects are extended beyond their original first phase. So it might seem that no harm is done by imposing a five-year time frame, or, as it turns out so frequently, a set of successive five-year phases. But this is not so, for three reasons.

First of all, there is a difference of scale. Phasing of a fifteen-year project would almost certainly have a different character than a project planned for five years which is extended twice. The long-term project should and probably would start smaller and peak later.

Second, if the donors and their partners knew that the project life was to be longer, they would do some things differently; the first years would be more explicitly experimental or pilot in nature, and they would almost certainly have a training plan which was deliberate and more realistic.

Third, a longer time frame would allow more reasonable planning for recurrent-cost absorption in projects where this is relevant. The way things work now, the follow-on phase

of a rural development project, for example, is negotiated when the first phase is in mid-stream, perhaps three years into project execution. This is usually too early for it to be known how quickly, or indeed, whether the project's expectations will be realized. Yet it is at this stage that decisions are generally made about transfer of recurrent costs from the project to local budgets. There is some danger in this case that donors will impose on local budgets the costs of an experiment which has failed or which may fail after the donor pulls out.

For these reasons, in other than pure capital projects, donors should change project time horizons and the phasing of spending in line with the 10 to 15 year time frame which is, in reality, becoming increasingly common. Many donors cannot, of course, commit resources so far in the future, and most would be hesitant to do so. Most of the same results can be achieved by adhering to the present system of run-on projects if the early phases were slower and more explicitly pilot in nature, and if project authorities acted, especially in their management and training strategy, as if the project was going to last longer than five years.

3. Project Design

In the Sahel, design of almost all projects is the responsibility of donor technicians and consulting firms selected with heavy donor participation. A number of flaws have characterized the project design process. Remedies for the most important of these are summarized below.

a. More Weight to Skill Constraints

Technical and engineering factors are given relatively heavy weight, availability of skilled local manpower relatively little. Projects are often designed, therefore, as though management or skilled labor constraints do not exist. The assumption (implicit) is that management and skilled workers can be imported, via technical assistance. This results in a systematic tendency to design highly complex and skill-intensive projects.

b. Stress on Institution-Building

Priority has been given throughout the Sahel to considerations of short-term efficiency. Longer-term considerations regarding institution-building (which is really an investment in future absorptive capacity) have been sacrificed.

The tendency is perhaps most evident in agriculture. In the early post-independence years, Sahel governments shifted much of the responsibility for agricultural development to parastatal organizations based mainly on a single

subsector or commodity: coffee, cotton, groundnuts, etc. These organizations soon expanded their functional coverage, for various reasons. To reduce overhead costs it seemed desirable to extend the action of the development agency to new crops rather than set up parallel agencies. Also, single crop approaches rarely took account of farming system considerations. The area development organizations then realized that regional development frequently depended on improved infrastructure, which could be put under their management. All of this occurred with active support of the donor agencies. And then, in the 1970's, the donor community added to the growing complexity of rural development efforts by spreading the "integrated rural development project" approach. This added health, education, transport and other components to the basic agricultural project.

In principle there's nothing wrong with this broad-gauged attack on rural problems. In practice it has compounded large administrative problems, especially by magnifying difficulties of coordination between the project and the line agencies of government. Jurisdictional disputes arise not only with the ministries of Agriculture, but also with the other ministries - Education, Health, Public Works, etc. - whose interests are involved. The principles of simplicity and concentration of effort which are called for by the Sahelian administrative environment are neglected in these "integrated" projects.

A related problem is that of project autonomy. Almost always on the initiative of foreign donors, special project units have been created throughout the Sahel to implement rural development projects. Donors justify this approach by the need to bypass the inefficiencies of existing administrative structures, especially the need to free project managements from the sluggishness and uncertainties of government budget procedures, financial transactions, and rigidities in rules on staff hiring and pay. While these autonomous units have generally proved to be effective, they have also created new and serious problems.

First, they tend to become highly insulated enclaves. Their presence creates frictions in relations with other agencies, on whose cooperation and good will they frequently depend. They pirate staff by giving better pay, housing, and other conditions - a fact that certainly doesn't endear them to those remaining in the line ministries. Sometimes, the project units have priority claims on local budget resources. Thus, line ministries may belt-tighten while project units thrive. Moreover, their budgetary autonomy, reliance on expatriates and expatriate financing, and their ability to compete for good staff make them exceptional and expensive islands of flexibility and sophisticated management. Therefore, they can not be absorbed by the mainstream agencies. The assumption, still widespread, that the "autonomous project unit" model would be replicated has been

proved wrong. There is no absorbable model here, no demonstration for line agencies, since its effectiveness depends on levels and kinds of financing and forms of flexibility in personnel policy which government administrations are unable or unwilling to adopt on a broad scale.

The autonomous project units then are not models for administrative change. Nor are they themselves durable. Their heavy costs and special advantages depend on a donor presence; few can survive withdrawal of donor support, at least at prevailing levels of efficiency. At the same time autonomy means that the regular line agencies tend to be ignored. Therefore, little strengthening of administrative capacity occurs at that level. Indeed, in countries with numerous autonomous units, the existing agricultural institutions tend to wither.

By favoring autonomous project units, donors thus have sacrificed the growth of long-term absorptive capacity for short-term advantages in efficiency of project operation. What is called for now is a greater willingness to sacrifice these apparent short-term efficiency gains and work within the established agencies to strengthen their capacity.

c. Technical Assistance Changes

The third problem is implicit in the first two and was mentioned earlier: excessive reliance on technical assistance. A consensus is emerging among many donors, widely

shared in the Sahel, that technical assistance strategies have to be reexamined. The following analysis concerns, in particular, that form of technical assistance which involves a resident "advisor" or "expert" (a manager or technician) who works with a local "counterpart" (someone to be trained on the job), theoretically to take over when the expatriate advisor or expert leaves. This is only one model of technical assistance, but probably the most common, with the exception of teachers.

The main problems with this kind of technical assistance are well known.

Its cost-effectiveness is uncertain, even by short-run efficiency criteria. Salaries and living costs are astronomical; \$150,000 a year is not at all uncommon in the Sahel. Logistical difficulties of maintaining expatriates in the field are sizable. Settling in and winding down take exorbitant amounts of the expatriate's time, so time actually worked is often appreciably below its theoretical level.

The recruitment of high quality technical assistance, difficult elsewhere in the Third World, is especially so in the Sahel. This is partly due to the fact that the Sahel must compete against places which are climatically more popular and physically more comfortable. In all cases, the probability of getting the right fit between the job and the person is slight. First, the person must have experience, technical competence, capacity and willingness to train on

the job, an adaptable personality, and often, special language skills. Then he or she must be available when needed, untroubled by demands of job or family.

Even with the best people imaginable, the expatriate presence as "advisor" or "expert" involves fundamental problems.

- The greenest "expert" is almost always paid better than the most seasoned local. Differentials are generally vast: a middle-level expatriate on technical assistance terms often earns ten times the salary of the director of the agency he works in. And this doesn't include fringe benefits. Few local people believe any expatriate is worth that much of a premium, and they are rarely persuaded otherwise by the argument that someone else pays for the expatriate or that his wage reflects international market forces.

- The expatriate-counterpart relationship often generates sour attitudes on both sides. Many local counterparts feel that the expatriates have too little commitment to the country they work in and not much understanding for, or sympathy with its problems. The expatriate technicians, on their side, often come to feel that their counterparts are not only inadequately trained, but more importantly that they are inadequately committed to their work. These are not attitudes conducive to an effective training relationship.

- The training impact of the expert's presence is limited by other factors. The training component of the expert's

work is often slighted because the expatriate is judged by his performance on the job, not by his training effectiveness. Sometimes he is more interested in keeping his job than in training a successor. The counterpart is normally young and inexperienced, probably lacks adequate technical preparation, and is perhaps underpaid and lacks incentive. Turnover is high, so both counterpart and expert know that job-specific training will probably be wasted. Thus, very little genuine training takes place.

These are the kinds of considerations that led the World Bank, in its report on Africa, to conclude:

...these factors, combined with a growing sense of confidence among local technicians, are lowering the threshold of acceptability of expatriate technical assistance, and they suggest that some shift in policy direction is in order. First, short-term technical assistance should be relied on more heavily to complement a greater reliance on local staff, systems, and institutions. Recruitment and logistic problems are much reduced in this way, and the injection of outside advice and help can, in some instances, be more effective. Second, local people should be employed more frequently as consultants and staff for externally financed projects... Third, given the difficulties of combining the functions of management or technical expert and trainer, resident technical assistance people as well as those on short-term assignments should be explicitly named "trainers", except where they have another task of explicitly higher priority; in general, training should be primary and, in some cases, their exclusive responsibility. 1/

1/ World Bank, Accelerated Development..., p. 132.

d. Reduced Public Sector Burden

The project-making process is almost entirely aimed at devising public sector solutions to problems, even where non-public sector alternatives exist. The donor community, through its preponderant role in project-making and financing, thereby contributes to the administrative overload of the public sector (i.e., one of the principal constraints on Sahelian absorptive capacity).

The propensity for public sector approaches is evident in all sectors. If there is a shortage of skilled workers, for example, vocational schools are proposed rather than subsidies to private firms to expand training. In programs of rural water supply, public agencies are made responsible for repair and maintenance, or they rely on some artificial "cooperative" arrangement; private sector options are almost never explored. In rural development projects in particular, parastatals remain the chosen vehicle in donor-supported efforts. They are commonly given monopolies on supply of inputs and exclusive purchasing rights over outputs. Private traders, often a competitive and efficient group, are either ignored or outlawed.

Now some of the public sector focus is right; governments have extremely large responsibilities in the Sahel and it is certainly important that their capacities to perform these roles be strengthened. But it is nonetheless true

that even where non-public sector solutions are feasible, they are rarely pursued. If this were to change, short-term absorptive capacity could be increased since other economic agents would be able to play a more active developmental role. And by nurturing broader capacity in the economic system, longer-term abilities to invest and/or absorb foreign assistance would also be expanded.

C. Increased Coordination

Aid inflows to the Sahel grew extraordinarily fast in the 1970's. Total disbursements rose from \$200 million in 1971 to \$1.1 billion in 1978 - a compound rate of growth of over 40% a year ^{1/}. Sources have also become much more numerous as new donors, such as the OPEC countries, have come on the scene. This rapid growth in aid volume and the accompanying diversification of aid sources has created significant problems.

1. Consequences of Uncoordinated Assistance

First, donors compete for projects and for people to run them. As the Sub-Saharan Report of the World Bank notes:

This competition ... raises the economic or opportunity cost of new projects ... scarce factors are made more costly, coordination is rendered more burdensome, and accumulat-

^{1/} CILSS/Club du Sahel, Official Development Assistance to CILSS Member Countries from 1975 to 1979, Vol. I, p. 22.

ing commitments tie up fiscal resources with little consideration of the costs in terms of sacrificed financing for existing activities. ^{1/}

Secondly, the multiplicity of donors, each operating independently, imposes an especially heavy burden on the Sahel countries because of their limited administrative capacities. These burdens are well known. (1) Competition for projects among donors often undermines local decision-making procedures and increases the difficulty of holding to appropriate sectoral and national priorities. (2) Different donor requirements and procedures regarding project identification, appraisal, procurement policies, etc. enormously complicate the tasks of national administrations. This remains true in the Sahel despite sizeable efforts by CILSS and the Club du Sahel to harmonize these procedures. (3) Under cofinancing arrangements, which are more and more common, individual donors leave to the host agency the demanding task of arranging total project financing. Cost overruns cause special problems in cofinanced projects since the authorities are usually responsible for finding supplementary financing.

Donor coordination is especially vital in the Sahel for an additional reason. Much aid to this region is in non-project form, and in some cases (Mali, for example, and Senegal in the case of its structural adjustment loans)

^{1/} World Bank, Accelerated Development..., p. 130.

policy dialogue is an important part of the aid process. But unless donors reach some measure of common understanding about needed directions of policy change, dialogue will be useless and a decrease in the volume of assistance could result. Similarly, a donor giving non-project assistance is unlikely to be content to see it sustain some other donor's "unsuitable" project.

2. Donor Responses

Several lines of attack are open to donors. First, the effort to harmonize and simplify aid procedures via the CILSS and Club du Sahel should be continued ^{1/}. Secondly, donor agencies must tighten their own internal project screening procedures so as to avoid imposing low priority or poorly thought through project ideas on the Sahel. Third, and most important, donors need to devise more effective instruments of coordination on the country level. Presently, donor coordination occurs mainly at high-level consultative group-type meetings (like those of ACDA, for example) or at "round tables" such as those that followed the September 1981 Paris conference on the Least Developed Countries. These meetings are useful in many ways. But they do not provide much genuine coordination on the ground and they

^{1/} See O.E.C.D., Compendium of Aid Procedures: A Review of Current Practices of Members of the Development Assistance Committee, O.E.C.D., Paris, 1981.

generate very little in the way of policy dialogue. On the country level, communication between donors remains informal and fragmentary despite recent efforts by the Club du Sahel to encourage national-level discussions ^{1/}.

One possible new approach to donor coordination is the creation of joint sectoral committees. Their purpose would be to bring together, at the country level, donor and local government technicians to discuss strategic policies and projects for specific sectors. For example, a rural development joint committee could consider new projects in detail and devise a strategy for achieving food security. It could be a forum for analysis of price and marketing policy options. It could also encourage the consistency of agricultural policies and programs with those in related sectors. All donors active in the sector would be represented by a technician knowledgeable in the problems of that sector. Technical people from relevant agencies would comprise the local representation. Meetings would take place periodically - perhaps three times a year over a specified period

^{1/} Some of the reasons for slow progress in this respect were summarized as follows in the World Bank's Africa Report, Accelerated Development..., p. 130. "Coordination of project selection criteria and aid allocations is a bigger problem. There are hesitations about greater donor coordination on both sides. Each donor institution sees things differently, and each has different constraints and objectives. Many find the idea of orchestration objectionable. Some African governments are also unenthusiastic. They fear "ganging up," as well as a loss of "maneuverability"; individual spending agencies would almost certainly see their scope of action limited by effective donor coordination."

of three years, for example. A special secretariat might give administrative continuity and support the Joint Committee's actions. The idea is to provide a forum for sustained discussion at the sectoral level among both donors and local people. As a result, more coordination and better understanding on both sides could lead to genuine policy dialogue. It could also lead to sectoral loans or project and program loans with better defined policy components and better possibilities for effective monitoring. Such a vehicle is especially suitable for bilateral donors who are generally unable or unwilling to engage in detailed dialogue over macroeconomic policy problems.

D. Enclave-Type Overrides of Absorptive Capacity Problems

Enclave-type operations can be adopted where locally acceptable and technically feasible and where the target is removal of major bottlenecks in the economy. The notion here is that there are key problems that are not amenable to removal by "conventional" means, but may yield to a sustained, once-and-for-all effort involving massive utilization of imported technology and skill.

The most important example is in the area of agricultural research. The highest agricultural priority for the Sahel is to devise appropriate new technology for millets, sorghums, maize, upland rice, and even irrigated rice. To achieve success in these research efforts, major national-

level action will be required. But it takes a long time to develop the required level of research capacity in poor countries at early stages of development. Because of the urgency of this task, some Sahel governments might find it desirable to accept a major donor program to organize and staff national research activity, with large-scale use of operational technical assistance. In this approach, institution-building would take a back seat.

Other enclave-type possibilities are suggested by the Onchocerciasis (river blindness) Control Program (OCP) in West Africa. Here, an expensive, high-technology approach is being used for disease control, with international financing. If transmission can be interrupted, as the project sponsors hope, the project, in its present form, could end in twenty years with its mission accomplished. The OCP makes few demands on local resources in money or skills; its purpose is to effect a one-time change in the environment, which, if successful, will improve the health of the people of the region and open up new land for possible cultivation. If this works, lower-cost maintenance operations can be taken over by local governments in the future.

There may be other disease control problems for which an enclave approach of the OCP type is appropriate. Conceivably, the attack on animal trypanosomiasis is a possibility if an acceptable technology is worked out and the economic rate of return is acceptable. Moreover, there may be other

areas outside of research and disease control which are suitable for this kind of approach.

E. Recurrent Costs

Shortage of recurrent financing is now the absorptive capacity constraint most widely cited among Sahelian donors. Their concern is that many existing government activities are underfunded, that maturing projects struggle to find a place in recurrent budgets, and that there are many programs and projects coming on stream in the near future for which uncommitted Sahelian government revenues are not in sight.

Clearly, the recurrent cost problem is of great practical importance ^{1/}. There is, however, much that donors (and Sahelian governments) can do about it.

1. Possible Donor Adjustments

There is a trade-off between capital expenditure now and other costs later. The most pertinent example is in road construction. The "traditional" approach is to build to minimum standards at the outset and upgrade as the volume

^{1/} The recurrent cost problem is also important for the theory of absorptive capacity. Once non-project aid (and aid for projects that are not directly productive) is admitted, the preoccupations of the mainstream literature on absorptive capacity become largely irrelevant. Indeed, in these circumstances a recurrent budget constraint becomes the main theoretical limit on absorption of foreign resources. This means that the only true determinant of absorptive capacity in the real world is the extent of donor willingness to underwrite operating budgets.

of traffic increases. However, this is a maintenance-intensive approach, and the organizational requirements are heavy. In this case, it is entirely possible to build roads to higher standards at the outset and to take into account in all ancillary construction (shoulders, culverts, bridges, etc.) the likelihood that maintenance capacity will be scarce during the life of that road ^{1/}.

Requirements on so-called "counterpart contributions" to the costs of development projects should be relaxed as part of donor assistance for policy reform. In fact, most donors in the Sahel have already adapted to local needs in this area. Thus, there are normally two components of local "counterpart contributions" to project financing. One is cash - an actual transfer of funds to the project account. In the case of IBRD loans, for example, this is usually 10-15% of the total project cost. The other is a contribution in kind, including for example the rent of the office space for project staff, the salaries of local staff working on the project, petrol, and transport. These are usually imputed costs only, in that they would exist in the absence of

^{1/} If the obstacle to proper maintenance is only financial (shortage of recurrent funds) rather than lack of organizational capacity, one rational response from donors would be to finance recurrent costs rather than to build to a higher standard. This kind of response would flow from project analyses if an appropriate (shadow) price were put on future public funds required for maintenance.

the project. In most cases donors now accept these in-kind contributions as satisfying the "counterpart contribution" requirements.

This means, of course, that externally-funded projects need not put incremental demands on local budget resources; this significantly expands absorptive capacity in the short-run.

Donors can address the "public sector bias" problem noted above. The projects and programs they finance can be designed to draw more fully on the energies and resources of non-government economic agents - true cooperatives, private firms and individual agents (traders, for example). Claims on government revenues and other public sector resources can thereby be reduced. Such an approach can also lead to more efficient use of existing public resources by providing competition in the provision of goods and services. And it can stimulate economic growth, thereby creating new sources of future public revenues.

2. Analytic Issues

The analytic foundations of the recurrent cost problem are not always clearly understood, and this sometimes leads to inappropriate donor policies and proposals. Two such proposals are considered here. The first deals with the idea that the "recurrent cost constraint" of Sahelian governments can and should be measured by estimating the future operating

costs of present development projects and comparing these projected costs to projected government revenues. The second has to do with the growing donor insistence that Sahel governments be prepared to take over recurrent charges of all externally-aided projects.

a. Estimating the "Recurrent Cost Gap"

The essence of the recurrent cost gap is the capacity of a host government to operate a public service or facility once it has been put into place with external assistance. One proposed measure of this constraint is the "gap" between expected public revenues and the estimated cost of operating development projects presently underway or planned - most of them in the Sahel, with foreign financing.

The difficulties with this proposed measure are both conceptual and empirical.

What is implicitly involved on the "demand for revenues" side of a future recurrent cost gap is some judgement about "acceptable" standards of operation of public services (or production facilities). After withdrawal of foreign assistance, an aided program or project may not (probably will not) run at the same level of efficiency as it did while external resources were available. It won't have as much money, as much budget flexibility, as much administrative autonomy, or as many trained people. It is more likely therefore to operate at that level of effectiveness which

is "normal" or "average" in the public sector. Only if marginal recurrent expenditures lead to a decline in average effectiveness can there be said to be a recurrent cost problem.

On the revenue side, too many uncertainties exist to permit a credible estimate of the recurrent cost gap.

— Even without any change in the tax structure, future revenues in Sahel-type economies depend heavily on world commodity prices. To base acceptance of aided projects today on estimates of commodity prices five years from now involves great uncertainty. The costs of excessive "realism" can be high; for reasons mentioned below, changed policies can correct for overly optimistic estimates, but overly pessimistic ones represent opportunities lost forever.

— Many changes can take place that can validate an overly-optimistic decision about future capacity to maintain and operate projects.

- The donors themselves may decide to finance more project operating costs.

- New revenues can be generated by new taxes, higher tax rates, or wider resort to user charges.

- Government might reallocate existing expenditures - e.g., spend less for military purposes and more for running schools and dispensaries, or less on salaries and more on petrol for agricultural workers.

The point of this is not to deny the importance of

estimating future revenues and recurrent commitments and taking these into account for planning purposes. It is rather to suggest first that estimates of recurrent cost "commitments" should be based on realistic standards of performance when aid is terminated; and second, that given the inherent uncertainty of revenue projection and the possibility of accomodating changes in donor policies or government expenditure patterns, it is not realistic to expect Sahelian governments to take "gap" estimates as serious planning guides.

b. Local Absorption of Project Recurrent Costs

Some simple (oversimplified) propositions should clarify this problem.

- Development expenditure today will create a recurrent-cost problem tomorrow only to the extent that: (1) the project is unproductive, i.e., it does not increase the stream of future output enough to finance its running costs; (2) it may be productive but cost recovery is not possible; and (3) the project entails new hires, not simply an absorption of previously hired employees.

- If the productive impact of the project is less than expected and local fiscal resources can be better used elsewhere, the obvious answer is to let the project die. This may prove difficult for bureaucratic, political, or social reasons, but the analytic issue is unambiguous. Where cost

recovery is difficult, the analytic issue is less clear. A productive project in this category should be funded from general revenues, though this obviously depends on its productivity relative to other projects competing for recurrent financing and on the nature of the obstacles to cost recovery.

Some implications for donor policy are clear. First, good quality projects reduce or eliminate future recurrent cost difficulties. Second, donors should be more discriminating in their insistence that governments assume recurrent project costs. While in principle correct, it is only so when the project is well-established and successful. Donors must avoid passing on the costs of failed experiments as a permanent budget obligation.

Finally, the art of mixing foreign and local resources in budget constrained economies is to use foreign aid as a financial and organizational catalyst which will allow more productive use of existing government staff and facilities. A rural development project, for example, should mostly utilize existing staff and the existing recurrent budget of the agency in question, and use outside money and technical help to make them work better. Some incremental staff may be necessary, but donors should know that a recurrent-cost problem will arise in the future only if the project does not yield its expected output, and an expanded payroll must then be absorbed by the government. Therefore, prudence is

required in bringing on new staff and in insisting, before the results are clear, that this incremental staff be absorbed by the government's budget.

IV. SAHEL GOVERNMENT ACTIONS

Donor policies to overcome absorptive capacity constraints have thus far been at the center of discussion. This is not unreasonable since foreign aid is at issue and since donors can do much to reduce absorptive capacity constraints and increase aid effectiveness. There are obviously many steps that Sahel governments can take themselves.

A. Higher Priority for Economic Development ,

Perhaps the most important step is a reordering of priorities; a moving up of economic development to a higher place in the list of public policy objectives in the states of the region.

This is not to question the obvious legitimacy of using resources to achieve political, social, or national security objectives; non-economic use of resources is universal. It is simply to suggest the need for a wider acceptance of two propositions already accepted by many Sahelian political spokesmen. First, that without faster economic growth, all other objectives are threatened. In the end, good economics is good politics; appropriate policies vigorously applied will bring the economic growth necessary to strengthen political independence and provide the resources needed for smoother social change and increased political cohesion. For some of the states of the region, economic

imperatives are especially severe: without an economic turnaround it will not be possible even to maintain present levels of income and basic services.

B. Strengthen Economic Decision-Making Capacity

Even with the strongest imaginable commitment to economic development, resources will be little better used and growth will be little accelerated without stronger economic decision-making capacities. Three main activities require attention.

1. Project Generation

As noted earlier, the scarcity of good projects is only to a small extent a problem of identification and packaging. For all productive projects, and many others, a more important factor is the sparsity of solid, long-term, location-specific data. Longer, more focused, project-oriented research is needed.

2. Screening Expenditure Proposals

Comments in the World Bank's Africa Report can be applied to the Sahel:

...in government after government many investment projects and related claims on resources pass through the public sector's administrative machinery without proper evaluation. Improvement of project screening institutions and procedures is indispensable to better investment programming... ^{1/}

^{1/} World Bank, Accelerated Development..., p. 32.

3. Policy Analysis

Too often in the Sahel, as in many other regions, policy issues of great importance are decided with insufficient economic analysis. Examples include changes in public sector wage levels, tax concessions to private investors, price policies for major crops, and changes in educational policies.

The implications for policy are clear. (1) Project-focused research has to be greatly expanded. (2) Planning and Finance Ministries and budget agencies (the central screening bodies in Sahel public sectors) have to strengthen their capacities to assess programs and policies. This means cutting back on activities that are of lower priority - repeated revisions of medium-term plans, for example, and regional planning efforts. The focus should be on the rationalization of public expenditure decisions at the center of government. (3) Policy analysis units should be created (or strengthened), especially in Finance Ministries.

C. Load Shedding: Better Mobilization of the Indigenous Private Sector

Implementation problems will continue to cripple even better-framed and evaluated programs because of scarcities of technical and managerial skills and because Sahel bureaucracies find themselves with too many tasks, given their manpower and organizational capacity. In the long-run this

problem will be eased by the continuing emphasis on education and training. But at least for the near term other steps are needed. Sahel governments should seek ways to shed low priority or unnecessary activities. They can, in many instances, find alternative channels for production of goods and delivery of services, notably by encouraging the indigenous private sector. The advantages of even small steps in this direction could be substantial. It could make the public sector more efficient by allowing greater focus on high priority tasks; the public sector can perform its central functions better if it can be relieved of tasks which are secondary. Thus, less involvement in foodgrain marketing, in distribution of agricultural inputs, in running tomato canneries, or in selling matches might make for better operation of railroads and power companies, better road maintenance, improved health care systems, and better general administration.

Wider resort to the indigenous private sector can also improve efficiency of government entities by exposing them to competition. It can also mobilize new resources - individual energies, skills, and money often neglected in present policies. A more competitive provision of services will improve the quality of these services since some tasks are better done by decentralized units. Thus, the competition will encourage the development of entrepreneurial skills. As a result, short and long-term absorptive

capacity constraints are reduced by a wider resort to the indigenous private sector.

D. More User Charges

Sahel governments can significantly increase their economic capacity to absorb investment and aid by following more permissive policies with respect to user charges. Those who enjoy public services should bear more of their cost. For most Sahelians, access to public services is limited; few rural people have access to modern health care facilities or to secondary schools. Because there is not enough money to expand these services to meet demands, the available supplies are rationed (unofficially). This means that even though people are willing to pay for services, there are few to be had, and as a result they may turn to illicit sources.

Subsidies for services like health care and education are justified. But in the Sahel states these subsidies frequently approach 100% ("free" services). This is not defensible economically or socially in these poor countries with their large proportions of unserved people and their severe fiscal problems. Higher and more generalized user charges would encourage more rational use of public services and permit their supply to expand.

As noted earlier, such recommendations are repugnant to political authorities almost everywhere. They prefer to

make services cheaper, not more expensive. But in the Sahel, public demand for services is so great and fiscal capacity so limited, that many governments in the region will have to look again at this issue.

In dealing with the user charge issue, and with other problems mentioned earlier, the Sahelian authorities will have to take steps that require great political courage and involve some risks. But neglect of these problems also entails great costs and risks. Most importantly, positive action has the potential of great economic rewards for the Sahel states and their people.

ANNEX I

TERMS OF REFERENCE

ABSORPTIVE CAPACITY OF SAHEL COUNTRIES

Terms of Reference

The problem of absorptive capacity of Sahel countries was raised by a report of the Inspector General of USAID (Audit Report No. 0-625-81-52 dated March 10, 1981).

Issues raised in the report concern constraints and abilities of the Sahel to effectively utilize development assistance. What are the optimum levels of financial and technical support that can be effectively utilized by the Sahelian States? What are the specific constraints to effective utilization of the assistance? How can the constraints be ameliorated to promote more effective utilization of donor financial and technical support? These are the questions posed by the audit report. The concept of absorptive capacity within the Sahel context should be viewed in a dynamic manner: how can absorptive capacity be increased and how can the states make better use of financing provided.

The Consultant will explore the concept of absorptive capacity and provide an analysis of the concept as it applies to the Sahel based on such commentary as may exist, including a definition of absorptive capacity and its application as a tool for analysis of the development situation of Sahel countries.

The Consultant will consider the questions posed above and provide conclusions and recommendations concerning them.

A draft final report will be submitted for comment by the Club du Sahel.

ANNEX II

THE "AID PIPELINE" PROBLEM IN PERSPECTIVE

The "Aid Pipeline" Problem in Perspective

The "aid pipeline" is given considerable emphasis in the Inspector General's Report ^{1/}.

Club du Sahel reports revealed a large and accumulating gap between donor commitments and disbursements of funds targeted for the Sahel. For the period 1974 through 1978, donor commitments exceeded disbursement of aid funds by \$1.2 billion. Should this disparity continue, the pipeline of development assistance will exceed annual donor commitments. One of the major causes of the disparity between commitments and disbursements is the inability of the Sahelian countries to effectively absorb the current magnitude of donor assistance.

The Report goes on to point out that since about 35 per cent of the 1974-1978 flow of assistance was non-project aid (mostly budget support) which is usually disbursed in the year committed, the disparity between commitments and disbursements is indicative of a particularly severe absorptive capacity problem for the Sahel. It concludes, on the basis of the pipeline analysis and other evidence, that "... the Sahelian states are having major difficulty absorbing the current high levels of donor assistance." ^{2/}

Now it may be that in terms of the number of "good" projects and effective programs financed and their impact on production, aid to the Sahel has been seriously deficient.

^{1/} United States Agency for International Development, The Inspector General, Improvements Must be Made in the Sahel Regional Development Program, Audit Report #0-625-81-52, March 10, 1981, p. 7.

^{2/} Ibid., p. 14.

But this is not the problem stressed in the Inspector General's Report, which focuses mainly on the disbursements-commitments gap and slow implementation of specific projects. In addressing this issue, it is first of all worth noting that it would be very surprising indeed if the aid flow of the mid-1970's had been ingested without many problems. There occurred in the Sahel one of the fastest build-ups of economic assistance in history, and this took place in resource-poor countries with highly underdeveloped administrative systems. The following table shows this extraordinarily rapid increase in ODA commitments and disbursements.

Annex II Table 1

ODA TO THE SAHEL COUNTRIES, COMMITMENTS AND DISBURSEMENTS, 1971-1981

(Millions of current dollars)

	Average 1971-73	1974	1975	1976	1977	1978	1979	1980	1981
Commitments	-	756	817	1136	1002	1377	1623	1502	1972
Net Disbursements	255	667	650	709	736	1105	1183	1202	-

Source: CILSS/OECD - Club du Sahel, Official Development Assistance to CILSS Member Countries From 1975 to 1981, Volume I, Synthesis, Sahel, D(82)188, November 1982, pp. 29-30.

Not only did the volume of aid grow rapidly, but also many new donors entered the picture, setting up completely new projects and often introducing new procedures.

Though rapid growth in aid volume and diversification of aid sources created significant problems, new data show that the aid pipeline was not as clogged as indicated by earlier data. Moreover, they indicate that the performance of the Sahelian countries, as measured by the coverage of commitments by disbursements, appears to have been no worse than that of other developing nations. Clarification of these issues has been rendered easier by the publication of recent research which provides firmer, more up-to-date statistics about the Sahelian aid pipeline ^{1/}. We draw extensively on these data in the following analysis.

As noted above, the Inspector General's Audit Report estimated the accumulated pipeline between 1974 and 1978 to be \$1.2 billion. The later, better data show that the pipeline was, in fact, much smaller during those years. These later figures for the period 1974-1978 ^{2/} indicate an accumulated net ^{3/} pipeline of \$602 million ^{4/}, which is half the size of the earlier estimate.

^{1/} CILSS/OECD - Club du Sahel, An Analysis of the Pipeline of Official Development Assistance (ODA) Funds Provided to the Sahel Countries, Sahel, D(82)173, October 1982. See also, CILSS/OECD - Club du Sahel, Official Development Assistance to CILSS Member Countries from 1975 to 1981, Volume I, Synthesis, Sahel, D(82)188, November 1982.

^{2/}, ^{3/}, and ^{4/} See next page for footnotes.

Footnotes

2/ The Audit Report, for example, estimated the pipeline for 1978 to be \$292 million, whereas later estimates in the Club Study put it at only \$58 million. The Report has \$267 million in the pipeline for 1977, the Club Study \$139 million. The 1975 difference is \$166 million versus \$41 million. It thus appears that some of the Report's strong conclusions derive from the inadequacies of the data available at that time.

3/ Sometimes loan and grant agreements are signed and reported, but for various reasons (technical, political, economic) are not carried out. Donors and recipients are less diligent in reporting cancelled projects than new ones. DAC Secretariat statistical experts estimate this discrepancy to be between 5 and 10 per cent of reported commitments. In Table 2 the 5% figure was applied.

4/ CILSS/OECD - Club du Sahel, Official Development Assistance to CILSS Member Countries from 1975-1981, Volume I, Synthesis, Sahel, D(82)188, November 1982, p. 3.

Hence, the pipeline of development assistance for 1974 to 1978 did not exceed annual donor commitments. Furthermore, as Table 2 shows (see next page), the Report's fear that the disparity between disbursements and commitments would grow and cause the aid pipeline to exceed annual donor commitments proved unwarranted. Actually, the accumulated pipeline for the period 1975 to 1980 is equal to \$768 million, or about half the 1980 level of commitments.

With respect to the Audit Report's claim that exclusion of non-project aid from the Sahelian pipeline would show a project pipeline significantly greater than the annual level of project commitments, the data are uncertain. In fact, this varies depending on the year of comparison. When estimated 1975-1980 project disbursements of \$3.5 billion ^{1/} are subtracted from \$4.7 billion of project commitments, the resulting project pipeline of \$1.2 billion does, in fact, exceed project commitments of 1980 which were about \$850 million. But project commitments in 1981 (\$1.3 billion) were greater than the project pipeline of 1975 to 1980.

It is not only in absolute terms that the pipeline problem in the Sahel is less acute than feared. Comparisons with other areas of the less developed world also show good

^{1/} The figure \$3.5 billion was estimated by treating 1975 to 1980 non-project commitments (\$2.8 billion) as entirely disbursed in the year committed and subtracting them from \$6.3 billion of total disbursements for 1975-1980. Source: CILSS/OECD - Club du Sahel, Official Development Assistance ..., pp. 53-54.

Annex II Table 2

ODA PIPELINE FOR SAHEL COUNTRIES
(Millions of current dollars)

	1975	1976	1977	1978	1979	1980	Total '75-80
ODA Commitments [1]	817	1136	1002	1378	1623	1502	7458
Gross Disbursements excl. regional [2]	666	729	752	1171	1360	1235	5913
Est. regional ODA Disbursements [3]	69	36	62	80	106	51	403
Total ODA Disburse- ments [4] = [2]+[3]	735	766	814	1251	1465	1286	6316
Gross Pipeline [1] - [4]	82	370	189	127	157	216	1142
Net Pipeline = gross pipeline less 5% of [1]	41	313	139	58	76	141	768
Disbursements as a % of commitments	90%	67%	81%	91%	90%	86%	85%

Note: All figures have been rounded off.

Source: CILSS/OECD - Club du Sahel, An Analysis of the Pipeline of ODA Funds Provided to the Sahel Countries, Sahel, D(82)173, October 1982, p. 3.

relative performance for the Sahel. The comparisons are reproduced in Table 3 (see next page).

The table shows that the Sahel, with its 85 per cent coverage of commitments by disbursements, is doing better than Africa as a whole, Asia, or LDCs world-wide. Thus, even though commitments to the Sahel have been rising by over 14 per cent per annum, a 160 per cent increase between 1974 and 1981, the Sahel's disbursement ratio is relatively high. When non-project disbursements are excluded, the Sahel's disbursement ratio falls from 85 per cent to 75 per cent ^{1/}. But this still compares favorably with the disbursement ratios for other developing areas.

The surprising aspect of these pipeline figures is that they look as good as they do. It is worth repeating that this discussion does not address the Inspector General's concern about the "quality" of the aid resources transferred to the Sahel during the 1970's. What is stated here is that the "expenditure performance" figures (disbursement-commitment ratios and size of pipeline) do not themselves reveal any special absorptive capacity problems in the region.

To the extent that this is true, interesting questions arise as to how it is to be explained. One set of factors is evident: donors adjusted the aid mix and aid conditions - more non-project aid, greater coverage of recurrent and local

^{1/} Project disbursements were estimated before at \$3.5 billion. With \$4.7 billion of total project commitments, a disbursement ratio of 75 per cent is attained.

Annex II Table 3

INTERNATIONAL COMPARISONS OF NET ODA DISBURSEMENTS AND COMMITMENTS

(Millions of current dollars)

	1975	1976	1977	1978	1979	1980	Total '75-80
ODA Commitments [1]	817	1136	1002	1378	1623	1502	7458
Gross ODA disbursements excl. regional programs [2]	666	729	752	1171	1360	1235	5913
Est. of regional ODA disbursements [3]	69	36	62	80	106	51	403
Total gross ODA disbursements [4] = [2]+[3]	735	766	814	1251	1465	1286	6316
% of commitments spent in the Sahel [5] = [4]/[1]	90%	67%	81%	91%	90%	86%	85%
% of commitments spent in Africa	77%	75%	67%	86%	79%	82%	78%
% of commitments spent in Asia	79%	79%	70%	60%	86%	82%	76%
% of commitments spent for all developing countries	81%	78%	73%	73%	83%	84%	79%

Note: All figures have been rounded off.

Source: CILSS/OECD - Club du Sahel, Official Development Assistance to CILSS Member Countries from 1975 to 1981, Volume 1, Synthesis, Sahel, D(82)188, November 1982, p. 39.

costs, reduced "counterpart" requirements, and perhaps financing of sectors and projects which are technically easier to implement. Other factors may also be present, but these are not yet well-understood.

ANNEX III

THE CONCEPT OF ABSORPTIVE CAPACITY:

A LITERATURE SURVEY

The Concept of Absorptive Capacity: A Literature Survey

The volume of writing on absorptive capacity exhibits a clear ebb and flow. The concept emerged in the early post-World War II years, when aid agencies discovered that "good" or "well-prepared" projects were in short supply in most of the developing world, so that even when capital resources were available, there were sharp limits on how fast and how well these resources could be transferred. Most of the literature on absorptive capacity derives from that situation. A secondary source was the concern about determining "aid needs" - the maximum aggregate resource flow from rich to poor countries.

The bulk of writing on absorptive capacity issues occurred between the mid-sixties and early 1970's. Indeed, the year 1971 saw the publication of two Ph.D. theses on the subject, which symbolizes its popularity during the previous decade, and also represents the high point of academic pre-occupation ^{1/}. The interest clearly subsided in the 1970's, probably for two reasons. Economic growth slowed after 1974 and large increases in aid inflows became problematic; exercises aimed at defining maximum aid flows grew irrelevant. Secondly, while the analytic problems involved in defining

^{1/} Patrick Guillaumont, L'absorption du capital, Paris, Editions de Cujas, 1971. Willy J. Stevens, Capital Absorptive Capacity in Developing Countries, Leiden, Netherlands, A.W. Sijthoff, 1971.

and measuring absorptive capacity proved intractable, practitioner consensus emerged on the causes of limited absorptive capacity, so the subject became less interesting to policy makers.

The problem has reappeared more recently in two contexts. The first is in heavily-aided, very poor countries such as those in the Sahel. The other is in the oil-rich countries. The many lessons to be learned from experiences in these two sets of countries are as yet very little written about; the experiences are too recent. But they will undoubtedly give rise to a new wave of analysis of absorptive capacity ^{1/}.

The present survey, then, covers a literature dating primarily from the 1960's and early 1970's. It is based mainly on English language sources, though some effort was made to examine relevant French language contributions. Three principal questions guided the search of the literature. 1) Can we define and measure the optimal level of financial and technical support that can be effectively utilized by a given less-developed country? 2) What are the specific constraints to effective utilization of foreign assistance? 3) How can these constraints be reduced?

^{1/} Cf. Kadhim Al-Eyd, Oil Revenues and Economic Growth: Absorptive Capacity in Iraq, New York, Holt Reinhart, 1979. Saleh El-Serafy, "Absorptive Capacity: the Demand for Revenue and the Supply of Petroleum" in The Journal of Energy and Development, Vol. 7, No. 1, Autumn 1981, pp. 73-88.

A. Definitions of Absorptive Capacity

The term appears often in the scholarly literature, but there is no consensus on its definition. Most economists agree that in a broad sense, the concept involves: a) some notion of an optimum level of financial and technical support, and b) a set of constraints that puts an upper limit on investment, or on the volume of foreign aid a less-developed country can use productively (lack of infrastructure, knowledge, skills, or other cooperant factors).

Among the first to address absorptive capacity in these terms were Max Millikan and W.W. Rostow. They define it as:

...a limit on the size of a national development program and on the number of desirable and feasible projects ... set by the ability of the underdeveloped country to organize, administer, and carry out projects and to relate them to one another in such a way that the output of each project is used productively. 1/

This early definition is vague in many respects, and more rigorous analyses were soon forthcoming. The earliest full interpretation of the concept was presented by John Adler in his 1965 Brookings paper 2/. He describes absorptive capacity in terms of a schedule relating expected rate of return on investment on the vertical axis to the amount of capital investment on the horizontal axis (see Figure 1).

1/ Max F. Millikan and W.W. Rostow, A Proposal: Key to an Effective Foreign Policy, New York, Harper & Brothers, 1957, p. 16.

2/ John H. Adler, Absorptive Capacity: The Concept and Its Determinants, Washington, Brookings Institution, 1965.

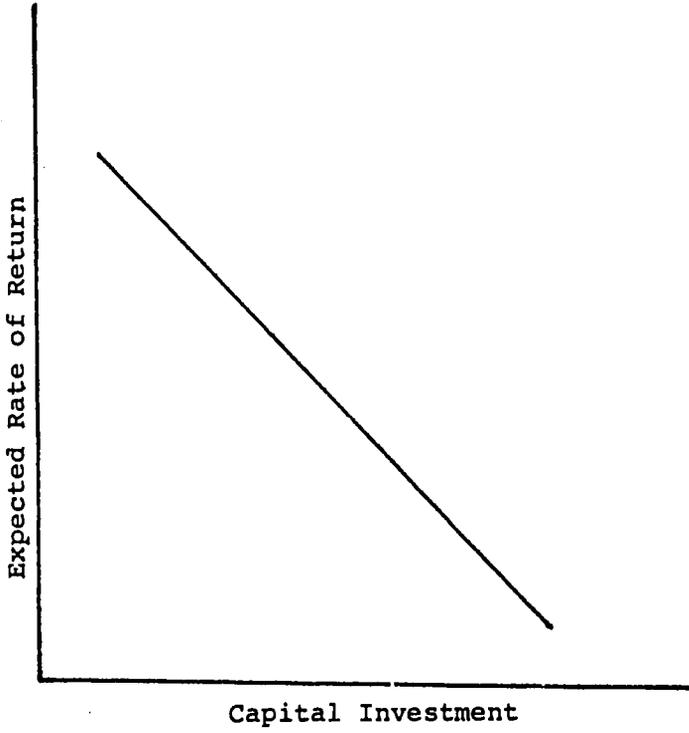


Figure 1.

Adapted from Adler, op. cit., p.3.

The schedule is downward sloping, reflecting the idea that as the amount of investment increases, its productivity falls. An investment is "effectively utilized" if its rate of return is "acceptable". Thus, the "optimum level" of investment is "that amount of investment expressed as a proportion of GNP, that can be made at an acceptable rate of return, with the supply of cooperant factors considered as given." ^{1/}

As we examine more rigorously the limit to the amount of productive investment possible, it becomes clear that much depends on the nature of the limits to absorptive capacity and how they are treated in the definition. Most economists agree that absorptive capacity depends on natural resources, the supply and quality of labor, and other cooperant factors. We will address the specific nature of limits to absorptive capacity later, but it is relevant now to see how these cooperant factors are incorporated into the definition. For example, how can there be an investment limit when cooperant factors can be imported? Kindleberger believes that absorptive capacity cannot be defined rigorously. Since practically anything can be gotten from abroad, including administrative abilities and managers, there is no theoretical limit to the amount of investment possible. He suggests that an organization such as the Army Corps of

^{1/} Ibid., p. 5.

Engineers or a large oil company could greatly increase the absorptive capacity of any underdeveloped country ^{1/}.

Adler agrees that the supply of cooperant factors can be increased but argues that "in the short run, this increase is either a physical impossibility or is so costly that it increases sharply the total cost of investment or the total operating cost, and thereby reduces the return on capital below the acceptable rate." ^{2/} In effect, Adler incorporates the cost of any measures that increase the supply of cooperant factors (including, for example, importing management) into the cost of the investment project for purposes of evaluating productivity. Thus, while Exxon could greatly increase investment, it could do so only at exorbitant cost.

Meier agrees with Adler that absorptive capacity can be a real constraint. "It sets a limit to the amount of effective investment physically possible, and although it can itself be increased through further investment, it does effectively limit the rate of development possible, particularly in the short-run." ^{3/}

Eckaus rejects the conventional view based on diminishing returns to one factor of production.

^{1/} Kindleberger, op. cit., pp. 326-27.

^{2/} Adler, op. cit., p. 5.

^{3/} Gerald M. Meier, Leading Issues in Economic Development, New York, Oxford University Press, 3rd Edition, 1976, p. 253.

...careful scheduling of increases in the availability of all factors would eliminate the constraint. With careful programming a country could plan its investment programme and the increase of cooperant factors so as to move from one long-run equilibrium position to another with factor productivities remaining constant from one position to the next. 1/

Eckaus claims that the Adler cooperant factors are not "satisfactory way(s) of describing the manner in which the conditions cited may cause a decline in productivity with increasing levels of investment." He characterizes them instead as obstacles to be overcome in making policy. Planners must use foresight in education and training requirements, and foresight in laying out stocks of blueprints. This requires time, but "careful advance scheduling would make it possible to achieve any level of investment in any period" with no productivity loss. Institutional, cultural, and social limits explain cross-country discrepancies in productivity, but not that the productivity of an additional unit of investment should fall more in some countries than in others. In other words, Eckaus believes these limits might explain differences in average, but not in marginal, productivity. "The absorptive capacity hypothesis is that the effect of the social milieu, broadly speaking, is to reduce the productivity of new investment projects as the

1/ Richard S. Eckaus, "Absorptive Capacity as a Constraint due to Maturation Processes" in Development and Planning, Jagdish Bhagwati and Richard Eckaus, eds., MIT Press, Cambridge, MA, 1973, p. 80.

level of investment increases in any period. The rationale of that relation has not yet been clearly demonstrated." ^{1/}

Eckaus does, however, accept the hypothesis that an absorptive capacity limit can be defined for an underdeveloped country. As will be explained in detail later, he defines the limit as a "maturation capacity" constraint reflecting "the ability of the economy to bring new projects to the 'rated' levels of productivity which are expected of mature projects." ^{2/}

B. Some Sub-Issues

1. "Partial" or "General" Approaches

Since most economists consider absorptive capacity to be related to diminishing returns to investment, Adler's definition is a convenient point of reference. His approach can be called "partial". He sets out an investment schedule and analyzes the problem of diminishing rates of return on the assumption that aggregate or macroeconomic variables are held constant. Other writers (the majority) treat the concept in an aggregative framework. Stevens, for example, argues that "any rational approach to absorptive capacity must set out from the aggregate concept." ^{3/} He uses a two

^{1/} Ibid., pp. 81-83.

^{2/} Ibid., p. 107.

^{3/} Willy J. Stevens, op. cit., pp. 37-40.

gap approach (import-export and investment-savings) and a national income accounting definition to argue that due to the high degree of substitution possible between factors, the aggregate approach is better.

One aspect of this difference in approach is the question of whether the absorptive capacity concept applies to all investment or foreign investment only. Adler argues that it is correct to speak of the absorptive capacity for foreign capital: "...the limit of absorptive capacity is determined by the inflow of foreign capital since it represents the marginal amount of total capital." ^{1/}

Most other writers, however, have adopted the more aggregative concept - the general method is to consider all investment together ^{2/}. In any case, it is not clear that the distinction is so critical. Whether foreign capital is considered alone, or as the marginal contribution of all investment, does not seem to change the answers to the important questions.

Many authors make the point that absorptive capacity can vary across sectors in an economy. Stevens asserts the

^{1/} Adler, op. cit., p. 25.

^{2/} Benjamin H. Higgins, Economic Development: Principles, Problems, and Policies, New York, W.W. Norton, Rev. ed. 1968, pp. 579-81. Hollis B. Chenery and Arthur MacEwan, "Optimal Pattern of Growth and Aid: The Case of Pakistan" in The Theory and Design of Economic Development, Irma Adelman and Erik Thorbecke (eds.), Baltimore, Johns Hopkins Press, 1966. Hollis B. Chenery and Alan M. Strout, "Foreign Assistance and Economic Development" in The American Economic Review, LVI: 4, September 1966.

following:

...'overall limited absorptive capacity' is only seldom a matter of serious concern, but 'specific absorptive capacity restrictions' arise over and over again, no matter what level of economic development the country is on. It cannot go unnoticed that, while constraints are encountered to apply [sic] to additional capital in particular sectors of the economy, other sectors are able to absorb more financial resources than are available. 1/

Al-Eyd attributed the differences in sector absorptive capacity to limited factor mobility between sectors and different cooperant factor requirements of different sectors 2/.

2. Does Productivity Fall Gradually or Sharply?

An important issue in the measurability of absorptive capacity is the nature of the "limit" to productive investment. Adler argues that productivity of additional investment falls off steadily. He thus considers that the slope of the rate of return schedule is gradual and constant. An absolute limit to absorptive capacity, he says, "is unlikely because it implies that beyond a certain level of investment, there is not a single investment opportunity which would yield a positive rate of return." 3/

1/ Stevens, op. cit., 1973 ed., p. 20.

2/ Kadhim A. Al-Eyd, op. cit., p. 83.

3/ Adler, op. cit., p. 2.

Rosenstein-Rodan, on the other hand, wrote that after a certain level of investment, productivity of additional investment falls rapidly. Due to these "narrow limits" to investment, the schedule is shaped as in Figure 2 ^{1/}. One reason this is an important issue is that the ability to measure absorptive capacity depends on the shape of the curve. If the curve is gradual, then it might be difficult to discover a precise value for the marginal productivity of investment. But if the shape resembles that in Figure 2, then measurement of absorptive capacity would be much easier ^{2/}.

3. The Determination of the Cut-Off Rate of Return

Perhaps the least well-defined and most discussed aspect of the absorptive capacity concept as presented in the literature is the determination of the cut-off rate of return to investment - i.e., that rate of return below which investment should not be made. In Adler's terminology, the question is one of determining the "acceptable rate of return" ^{3/}. Adler does not give us an answer, except to argue

^{1/} P.N. Rosenstein-Rodan, "International Aid for Underdeveloped Countries" in The Review of Economics and Statistics, Harvard University Press, XLIII:2, May 1961, p. 108.

^{2/} This point is made in Charles P. Kindleberger, Economic Development, New York, McGraw-Hill, 2nd ed., 1965, pp. 325-26.

^{3/} Adler, op. cit., p. 5.

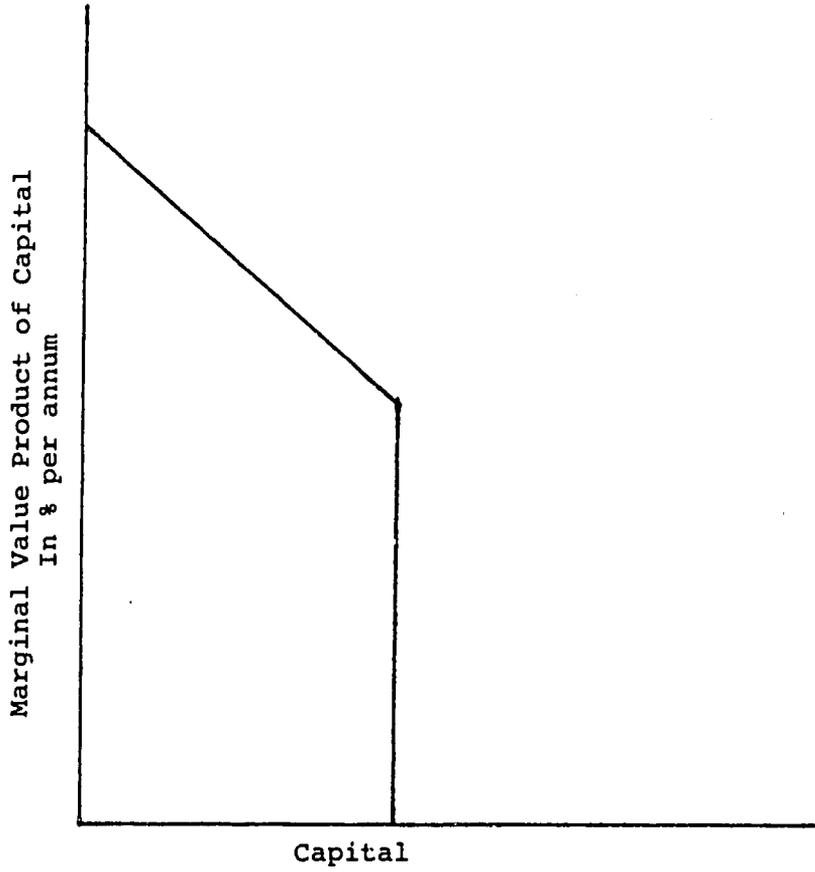


Figure 2.

Adapted from Kindleberger, op. cit., p. 325.

that there is no economic justification for accepting a different rate of return on domestic and foreign capital ^{1/}. Mason calls for the use of "some socially acceptable discount rate", but he too fails to explain how this rate should be determined ^{2/}. Stevens asserts that "the marginal rate of return should in all cases cover the financial cost of long-term capital. The implementation of a project whose financial rate of return falls below the cost of capital would indeed reduce national income and run counter to the very definition of absorptive capacity." ^{3/} Stevens entertains and rejects various guidelines for the acceptable rate of return, such as rates in domestic capital markets and at external financial windows ^{4/}. He concludes that "there is no doubt that rates at which the Bank [IBRD] lends are a good approximation to the real cost of long-term capital." ^{5/}

Ad-Eyd takes a different view. To him Adler's "acceptable rate of return" implies that "the rate of return that

^{1/} Adler, op. cit., p. 7.

^{2/} Edward S. Mason, On the Appropriate Size of a Development Program, Occasional Papers in International Affairs #8, Harvard University Center for International Affairs, August 1964, p. 1.

^{3/} Stevens, op. cit., p. 49.

^{4/} Ibid., pp. 134-36.

^{5/} Ibid., p. 123.

must be realized from installing an incremental unit of capital must be at least equal to the rate of return that can be realized by installing the same incremental unit of capital outside the country." ^{1/} He rejects this analysis, believing that "the concept of social rate of return is a subjective notion, a fact that demonstrates the difficulty of objectively measuring absorptive capacity." ^{2/}

Higgins chooses a variation on the marginal rate of return approach to absorptive capacity. He describes absorptive capacity as "the amount of investment that can be undertaken, over a five year period beginning from the present, without raising the marginal incremental capital-output ratio above $1/x$." ^{3/} Higgins states "one could make a strong case for putting x equal to zero." ^{4/} In other words, he believes that as long as an investment is making some net contribution to GNP, or the rate of return is positive, the investment is worthwhile.

Gulhati also uses the incremental capital-output ratio as a measure of effective use of investment capital ^{5/}. He

^{1/} Al-Eyd, op. cit., p. 81.

^{2/} Ibid., p. 85.

^{3/} Higgins, op. cit., p. 579.

^{4/} Ibid., p. 580.

^{5/} Ravi I. Gulhati, "The 'Need' for Foreign Resources, Absorptive and Debt Servicing Capacity" in Capital Movements and Economic Development, J.H. Adler (ed.), London, MacMillan, 1967, pp. 252-54.

suggests that an incremental capital-output ratio could be chosen to provide for the maximum GNP growth, but that this could "strain managerial resources" and lead to waste. As a result, he suggests an ICOR below this level. He suggests further that the cut-off rate might be given special weighting, and asserts that the cut-off criterion is purely a "value judgement".

Adler rejects the idea that investment is sound as long as there is positive output to capital ratio. This idea is based, according to Adler, on the flawed theory that the rate of return reflects only the optimization of the allocation of capital.

A low rate of return does not prove per se that capital is plentiful compared to other factors. In underdeveloped countries where the presumption that capital is scarce seems amply satisfied by the low rate of capital formation, a low rate of return on any particular project is evidence that the allocation of capital and other resources is deficient and could and should be improved. A low rate of return on investment is an indication that absorptive capacity has been reached and that the growth rate of the national product can be increased by devoting resources to increase the supply of cooperant factors rather than capital formation. ^{1/}

The optimum cut-off rate of return is clearly a nebulous concept in the literature. Part of the reason for this is that there seems to be some confusion about what constitutes "investment". Higgins and Gulhati, for example,

^{1/} Adler, op. cit., pp. 22-23.

appear to define investment as all financial resources used to increase the stock of capital (physical or human), including resources used to import cooperant factors. Adler, on the other hand, seems to define investment as physical capital formation.

The literature is thus in some disarray on this matter of definition. It may be for this reason that there is so little recent writing. The state of confusion in the literature results partly from a misguided attempt to define rigorously an "acceptable" rate of return. In the end this must rest on imprecise judgements regarding the opportunity cost of capital, the need for growth, and on other factors. Thus, the cut-off rate of return is highly subjective.

C. Measurement Problems

Most of the economists who propose a definition of absorptive capacity in terms of a decreasing rate of return to capital also describe, in varying degrees of detail, procedures for the measurement of a country's absorptive capacity. Furthermore, many writers try to give the concept an operational definition, by measuring absorptive capacity without addressing many of the issues discussed so far.

Adler is an example of the first group of economists. He goes into some detail in delineating a measurement process ^{1/}. First, he defines investment as gross, not net

^{1/} Ibid., pp. 8-16.

additions to the capital stock. The expected rate of return is "the sum total of the expected rate of return on all individual investment projects. The aggregate rate of return is the ratio of total returns to total investments." Measurement becomes an exercise in project evaluation. The planners "must include the properly evaluated benefits earned by all beneficiaries." They must take into account forward and backward linkages. For example, the benefits from an irrigation project must include the increased production of all farms in the area minus the opportunity cost of the increased work effort of the farmers involved. Planners must take into account complementary and indivisible projects. A steel mill and a sheet metal plant should be considered together, for example. On the other hand, if a project includes as a divisible part cost-saving measures, the rate of return is unjustly raised. For example, the construction of a rail line might involve the firing of unproductive workers on other unproductive lines, but this cost-saving should be separated from the benefits of the additional line.

Adler discusses at some length the price system and its relation to absorptive capacity. He discusses differences between the shadow price and market price of capital and labor, and sources of these differences ^{1/}. He warns against using

^{1/} Ibid., pp. 18-35.

shadow prices to justify projects with a low rate of return: "shadow prices are not a reason for engaging in investment activities in which the effective rate of return on capital is low; they are an indication that causes of the distortion must be eliminated insofar as possible."

Adler also addresses the time dimensions of absorptive capacity. He defines the short run as determined by the volume of "ready to go" projects. The medium-term absorptive capacity is determined by the "availability of investment projects which have been determined to be 'feasible'." Long-run absorptive capacity is indeterminate, since it depends on the size and nature of shorter run investment programs.

Stevens sets out a measurement methodology similar to Adler's ^{1/}. He proposes: 1) an assessment of all clusters of complementary projects with all linkages taken into account, 2) a calculation of "national financial profitability" where all financial costs and benefits (external as well as internal) are estimated over the entire lifetime of the projects, 3) the comprehensive use of shadow prices, 4) the discounting of all future costs and benefits, and 5) the calculation of cumulative net present value. When the value reaches zero, or a specified cut-off point above zero, absorptive capacity has been reached.

He suggests a three to five year period for purposes of planning investment and determining absorptive capacity

^{1/} Stevens, op. cit., p. 48.

because "the determinants of the ability to absorb capital productively largely depend on events and investment decisions that have already taken place." ^{1/} Also, this is the most practical time horizon.

Higgins and Gulhati take a different approach in that they calculate the contribution of investment to output using the incremental capital-output ratio. After describing their methodology we will address the more basic issue of the validity of the ICOR as an absorptive capacity measure ^{2/}.

Higgins suggests estimating the net addition to GNP directly, measuring the contribution for twenty years of the injection of a block of investment planned for the ensuing five years. Allowance must be made for maintaining the capital stock at its new level. The addition of each successive increment is the "marginal contribution of investment" which includes "all changes" accompanying the program. Absorptive capacity is then the amount of investment possible in a five year period without raising the marginal ICOR above $1/x$ ^{3/}. We have already discussed his judgement about the value of x .

Gulhati applies the ICOR idea by employing a schedule

^{1/} Ibid., p. 51.

^{2/} The incremental capital-output ratio is a ratio of the total amount of a given block of investment to its net contribution to GNP.

^{3/} Higgins, op. cit., p. 579.

relating ICOR to investment, as shown in Figure 3. Determining absorptive capacity becomes the simple task of finding the intersection of the cut-off criterion and the schedule relating the capital-output ratio to investment. Gulhati says the ICOR for maximum GNP growth might be point E, but because this might strain managerial resources and undermine the case for demanding continued austerity, point C or D should be chosen. This rationale seems unclear, as this strain on managerial capacity should be reflected in the ICOR schedule if it lowers the ICOR and ignored if it does not.

Faaland suggests a revision which is more in line with Higgins' use of the marginal ICOR. Planners should, he believes, "calculate the ICOR for the increments in development outlay required to move from one alternative development level to the next higher level." ^{1/} Faaland believes that this differential capital-output ratio is more relevant than Gulhati's average ICOR. Using Gulhati's cut-off rate of return point A, not point D, is then the optimum choice. Point B, where the differential ICOR is zero, is the point of maximum GNP growth.

Gulhati pays some attention to the important issue of the utility of the ICOR as a tool for measuring absorptive capacity. He suggests that the ICOR is more operational than the alternative approach of calculating the rate of

^{1/} Faaland, comments on Gulhati, op. cit., p. 263.

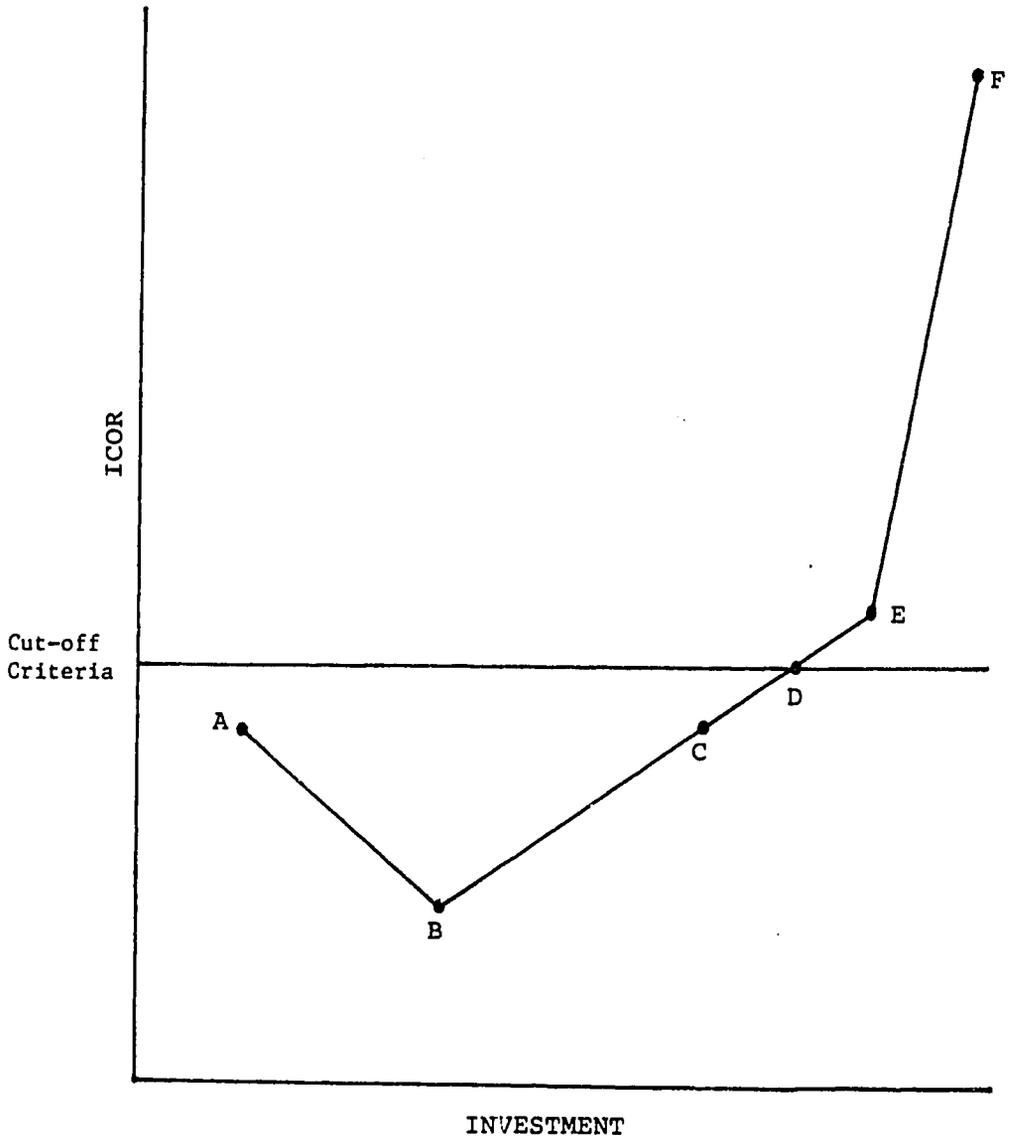


Figure 3.

Adapted from Gulhati, op. cit., p. 251.

return to marginal units of investment or investment projects. The marginal unit of investment is hard to define due to problems with linkages, and difficulties in making assumptions about the economy and growth. Also, areas such as education and health are easier to incorporate, in Gulhati's view, into an ICOR ^{1/}.

The ICOR relates investment to value added, "which is a more appropriate measure of social productivity than profit." Gulhati also considers it an advantage that the ICOR takes into account changes in natural resources, labor skills, technology, and management.

Gulhati addresses one deficiency of the ICOR: the fact that capital assets with long gestation periods and long serviceable lives show a high ICOR. "This inherent bias of the ICOR is an important drawback which reduces the value of this tool in appraising particular projects." Gulhati resolves this difficulty by asserting that at the aggregate level this bias tends to cancel out.

In the discussion that follows Gulhati's paper, the principal topic is the utility of the ICOR. Chenery believes the ICOR should not be used:

Absorptive capacity can best be defined in terms of what a country could do if it were offered a certain amount of foreign assistance. That is, how much might growth increase under given policies if a certain amount of foreign aid were granted for a given length of time. ^{2/}

^{1/} Gulhati, op. cit., pp. 250-51.

^{2/} Chenery, comments on Gulhati, op. cit., p. 264.

Absorptive capacity can best be determined by utilization of existing capital, so resource transfer does not equal investment. Since productivity of investment is the issue, indirect effects such as savings must be considered. Chenery believes that the ICOR does not do this and is therefore a deficient measure of absorptive capacity.

Rosenstein-Rodan agrees with Chenery that the ICOR is not a good measure. He says that:

...while the incremental capital-output ratio may be a good approximation of absorptive capacity for large investment programmes, it is hard to interpret when there is disguised unemployment or when the shadow price of labour is not unique, but made up of a number of shadow prices. What is the true incremental capital-output ratio in such cases? 1/

There is further debate between Horvat, Stolper and Rosenstein-Rodan as to whether ICORs reflect profitability. Rosenstein-Rodan resolves the issue by declaring that for five year periods it does not, but for longer periods it does a better job.

All of these measurement theories discussed so far involve detailed and long-term predictions about costs and benefits of all projects at hand. The operational utility of these schemes is thus open to dispute, often by their own advocates. Stevens, for example, rates the chief advantage of his method as the strict use of shadow prices. After saying this, he remarks that these shadow prices "are mostly

1/ Ibid., pp. 265-66.

elusive and impossible to handle in practice." Until more operational methods for equilibrium pricing will [sic] evolve, we will have to resort to a number of shortcuts." ^{1/}

A more fundamental difficulty involves the ability of planners to actually predict cost-benefit streams for all possible projects with any degree of precision. Gulhati speaks to this issue when he says that:

...the operational utility of constructing a schedule which relates the scale of investment to the associated incremental capital-output ratio is very much in doubt... Very few planning authorities have succeeded in fully integrating the results of project analysis at one end of the spectrum, with assumptions underlying the macroeconomic framework of development programmes at the other end. ^{2/}

As a result of these operational difficulties, all attempts at measurement of absorptive capacity have rejected these approaches which involve some kind of calculation of the productivity of investment. These alternate schemes generally combine qualitative assessment, educated guesswork, and an estimate of absorptive capacity based on past performance.

Rosenstein-Rodan provides one of the earliest examples of this method. He proposes three indexes of measurement.

(1) We may ascertain by how much a country has succeeded in increasing her volume of investment during the past five or more years. If a

^{1/} Stevens, op. cit., p. 147.

^{2/} Gulhati, op. cit., p. 254.

rate of increase of investment could be realized in the past, then a slightly higher rate made possible by technical assistance can be plausibly projected for the future. (2) We may also ascertain [whether a country can increase its savings effort]. (3) Finally, a judgement on a country's overall administrative and developmental organization is by no means as 'arbitrary' as it may seem....on the assumption of historical continuity. However, agreement can be obtained on a ranking order of magnitude. 1/

Millikan and Rostow admit that measurement of absorptive capacity is "difficult", but

...believe ... it is reasonable to assume that the average maximum expansion in the level of capital formation that can be achieved by countries in the early stages of development is from thirty to fifty percent in the first three or four years after planning for such expansion is initiated. 2/

No justification is given for this claim.

In linear programming models applied to development problems, an absorptive capacity constraint is often necessary, both to reflect reality and to make solutions to the models more practical. The classic example of this method of measuring absorptive capacity is provided by Chenery. He says:

...there is substantial evidence of a limit to the ability of developing countries to transform large increases in external resources into productive investment. The most convenient measure of this absorptive capacity limit is the rate of increase in investment which a country can achieve on a sustained basis.... Rates of 15-20 percent per year have been

1/ Rosenstein-Rodan, op. cit., pp. 108-9.

2/ Ibid., p. 96.

observed in a number of countries, but there has been no case of a higher value over any substantial period. 1/

He suggests using as a theoretical absorptive capacity "the highest compound growth of investment for any five-year period in the past decade." 2/ Chenery mentions productivity of aid in asserting that it "can be measured by the corresponding increase in consumption to total income which it makes possible," but does not incorporate it into his conception of absorptive capacity. He says in a footnote:

...the absolute limit on absorptive capacity is somewhat arbitrary. It implies that no further investment can take place because of shortages of complementary inputs. It would probably be more realistic to assume that above this limit further investment can be carried out but only at higher capital output ratios and with longer time lags. It would be possible to incorporate this more realistic assumption into our linear model by using step functions. 3/

He doesn't explain how this could be done in an analytically manageable way.

Lack of attention to the productivity of investment, a concept at the heart of absorptive capacity, robs Chenery of much of his relevance to the question at hand. Millikan comments:

...the [Chenery/MacEwan] model greatly simplifies the decision as to how much aid to offer in the early years by postulating a sharp

1/ Chenery and MacEwan, op. cit., pp. 151-52.

2/ Chenery and Strout, op. cit., p. 705.

3/ Chenery and MacEwan, op. cit., p. 157.

discontinuous limit, beta, to the maximum feasible rate of growth of investment. The capital-output ratio is in effect assumed to be a constant for all [rates of increase of I] up to beta and then goes in effect to infinity for rates of I above this... The model would gain greatly in realism if k, the capital-output ratio, could be made an explicitly increasing function of the rate of investment. In such a model the rising capital costs of successive movements of output would have to be balanced against the increased savings which such additional investments would generate. 1/

Hagen notes another problem with Chenery's method 2/. He cites a "probable upward bias" due to the fact that booms occur within certain five year time periods. If unemployed productive resources were available before the boom, the rate of growth of investment would be higher during the growth spurt than if there were full employment. He does, however, give Chenery credit for his effort: "...[His] data give a better order-of-magnitude estimate than was available previously." 3/

Adler has several objections to Chenery's approach:

Unfortunately, the apparent simplicity of this method of measuring absorptive capacity is more than offset by all the uncertainty which afflicts it. The rate of gross domestic investment may have increased because the economy managed to generate more savings or because more foreign capital or foreign aid has become available. 4/

1/ Millikan, commenting on Chenery and MacEwan, op. cit., p. 179.

2/ Everett E. Hagen, Ph.D., The Economics of Development, Homewood, IL, Irwin, 1968, rev. ed. 1975, p. 378.

3/ Loc. cit.

4/ Adler, op. cit., p. 8.

He further suggests that the assumption of "acceptable" minimum levels of productivity is based on an observed relation between investment and output in the past. Previous investment may have had a less than acceptable rate of return, and increased output may not have been related to investment. In this case absorptive capacity has not been increased ^{1/}.

Chenery's is the only method that has produced estimates of the absorptive capacity of specific countries, but this method is based more on "convenience", as he said, than on theoretical soundness or conceptual clarity. Al-Eyd, however, measures the absorptive capacity of Iraq in this fashion. Besides practicality, "this indirect method has the added advantage of focusing on the time dimension of absorptive capacity." ^{2/} In other words, this method of determining a rate of increase of investment emphasizes the fact that this rate can increase over time.

Al-Eyd's definition of Iraq's absorptive capacity is "that level of gross domestic investment that the country achieved during the sample '52-73 period." He continues:

... it is possible to measure Iraq's absorptive capacity by ascertaining the rate of increase in gross domestic investment that the country achieved on a sustained basis. This method of measurement implies that the maximum level of gross domestic investment in any one period cannot exceed the level of gross domestic investment in the preceding period times an exogenously determined rate of increase.

^{1/} Ibid., pp. 8-10.

^{2/} Al-Eyd, op. cit., p. 85.

Al-Eyd argues:

... it is permissible to measure the absorptive capacity of the economy [in this way] if it can be proved that the economy is not handicapped by a savings-investment gap and an import-export gap. 1/

He provides a wealth of evidence that Iraq had surplus funds. It had a large current account surplus, a low implementation rate of projects, a surplus of development appropriations over outlays in the budget, and a lack of government effort to mobilize private investment or foreign aid.

Al-Eyd calculates the rate of growth of capital formation for various time spans within the period 1953-1973, from five years to the whole period. He assesses the relevance of the figures for different periods. "It can be argued that a five year period is too short, and, therefore, a growth rate so calculated cannot be regarded as a part of a trend, unless it is clearly a part of a pattern that is sustainable across sectors. On the other hand, a time span that is too long could underestimate the economy's capacity." 2/

Al-Eyd then attempts to explain how the rise of oil prices in 1973 influenced rates of increase in investment, and hence absorptive capacity. He argues that the principal effect of the increase in prices was an increase in personal income through the terms of trade effect 3/.

1/ Ibid., pp. 86-92.

2/ Loc. cit.

3/ Ibid., pp. 87-100. The terms of trade effect is the increase in income resulting from an increase in the price of goods exported relative to the price of goods imported.

The increase in terms of trade increased disposable income, which, in turn, caused an increase in the demand for investable funds (i.e., a function of disposable income). Al-Eyd notes that investment as a percentage of disposable income doesn't vary much with oil price changes ^{1/}. This is evidence for his theory of the importance of aggregate demand in the sense that disposable income affects aggregate demand and investment seems to vary with disposable income.

The terms of trade effect shifts outward the derived demand for investment, and since aggregate supply is bottlenecked, prices rise. "The impact of the rise in aggregate demand and prices is that it is profitable to increase investment at every level of acceptable rate of return." ^{2/}

It is unclear in this analysis why an increase in available funds should increase absorptive capacity, since excess funds presumably were already available. We have seen that Al-Eyd first addresses this issue by explaining that the increase was due to an increase in aggregate demand, not an increase in invested funds. But he feels compelled to ask the question "why should the availability of additional funds, owing to the terms of trade income effect, cause an expansion of the country's absorptive capacity?"

His answer, predictably, is complicated.

It is a matter of degree. The financial resources that became available to the country after the rise in oil prices are extremely

^{1/} Ibid., p. 111.

^{2/} Ibid., p. 113.

large in comparison with the financial resources that were at its disposal before the rise in oil prices. Thus, the impact of oil revenues on aggregate demand after the rise in oil prices is much greater than their impact before the rise in oil prices. Furthermore, the large sums of foreign exchange earnings in recent years have enabled the government to import most of the goods and services necessary for the implementation of development projects. 1/

The second part of this explanation implies a foreign exchange shortage in the past, but Al-Eyd previously argued that no such shortage existed.

Al-Eyd mentions several other explanations for the rise in absorptive capacity after 1973 such as increased national confidence, the intersectoral impact of oil price rises, and the achievement of national sovereignty over natural resources. However, he stresses more than once the importation of cooperant factors, saying, for example, that "the availability of oil resources made it possible to augment the supply of cooperant factors through importation." This point raises conceptual questions. If additional funds can simply be used to import needed cooperant factors, why wasn't this done before the increase in oil prices? Al-Eyd answers that in several places the terms of trade effect increased aggregate demand. Thus, he seems to be implying that the principal barrier to increased investment in Iraq was not a shortage of cooperant factors, but inadequate domestic aggregate demand. We will again address this issue when we discuss

1/ Ibid., pp. 114-19.

factors limiting absorptive capacity.

One obvious source of the increased investment could be that the government accepted a lower rate of return due to an effective lowering of the opportunity cost of foreign exchange. Al-Eyd admits this possibility, but tentatively rejects it. He introduces as evidence the fact that private investment increased at the same time as government investment. He concedes that a shortage of labor and internal policy goals could encourage the government to forego disposable income for a lower rate of return. He points out that a lower financial rate of return is not synonymous with a lower social rate of return.

Al-Eyd believes his measure of absorptive capacity is valid, and that its usefulness is proven by the fact that Iraq's investment increase following its huge increase in oil revenues can be explained within his theory. An inevitable result of his type of analysis, however, is that the information on productivity of investment is sketchy and the planning utility of the predictions is limited.

It is worth mentioning two other studies of individual country absorptive capacities. Ahmad presents no theory or definition of absorptive capacity in his book on the absorptive capacity of Egypt ^{1/}. Instead he describes and analyzes the various factors in the Egyptian economy that affect

^{1/} Yusuf J. Ahmad, Absorptive Capacity of the Egyptian Economy, Paris, OECD, 1976.

absorptive capacity such as infrastructure, transportation, conservation, management and labor. He then evaluates the supply of these factors, searching for bottlenecks and areas for improvement. Thus, he doesn't measure as much as describe Egypt's absorptive capacity. An AID study of Haitian capacity for external assistance follows a similar approach in describing and discussing relevant elements of the Haitian development program ^{1/}. This type of approach equates absorptive capacity issues with "obstacles to development".

D. Limits to Absorptive Capacity

Many writers address the question of the determinants of the limits to absorptive capacity, and most give similar analyses. Adler divides the basic limits into five groups ^{2/}. Lack of knowledge, especially technological, is one major limiting factor. Lack of skills is another, particularly in project preparation and in carrying out projects. Shortage of entrepreneurs also enters in, as does lack of skills and management experience. Institutional factors, such as bureaucratic red tape, are sometimes stressed. Adler attributes some impact to the social and cultural situation in many less-developed countries. Chenery focuses exclusively

^{1/} United States Agency for International Development, Rural Sector Assessment for Haiti, Part II: The Agricultural Five-Year Plan (1976-1981) and Absorptive Capacity for External Assistance, November 1, 1975.

^{2/} Adler, op. cit., pp. 31-35.

on "the skill limit", the trained manpower constraint to productive investment ^{1/}.

Most economists describe the limits to absorptive capacity in these terms. For example, Meier says that "absorptive capacity depends on natural resources, taxes, the labour supply, the level of labour, technical and managerial skills, entrepreneurial ability. the efficiency of public administration, the extent of technology mindedness of the population, and so on." ^{2/} Ahmad, after a detailed study of the Egyptian economy, concludes that "while the absorptive capacity of Egypt is admittedly large, it is hindered and restricted currently by a number of factors.... weakness in the transport and communication sectors, lack of technical training and poverty of skilled and semi-skilled labor, poor agricultural output, and a lack of growth in the service sector." ^{3/}

Hagen splits the constraints to investment into two categories. Under "technical" limits he includes the size of the construction industry, the availability of materials for capital construction, organization, infrastructure, management, and the state of development of the existing production complex. The second category, "other limitations", includes values and motivation of workers and government officials ^{4/}.

^{1/} Chenery and Strout, op. cit., p. 686.

^{2/} Meier, op. cit., p. 253.

^{3/} Ahmad, op. cit., p. 135. See also the summaries of writing by Rosenstein-Rodan, Higgins, Waterston, Stevens (Annex IV).

^{4/} Hagen, op. cit., pp. 375-76.

Gulhati divides development into three phases and outlines obstacles in each phase ^{1/}. The first phase involves the identification of development opportunities, the assessment of technical and economic viabilities of the projects, the exploitation of natural resources, and the adaptation of technology in the development of new markets. He characterizes this as the entrepreneurial phase. The limit here is that often there is an aggregate plan but few projects. Gaps in knowledge of soil and subsoil resources, for example, and gaps in professional skills, as in science and economics, act as barriers to investment. Gulhati also lists a sociological inability or unwillingness in this phase to encourage national talent and an unwillingness to make quick development decisions. In Gulhati's second phase, plans are executed, projects are constructed, and equipment installed. The absorptive capacity of the second stage depends on the overall magnitude of investment projects, the internal balance of investments, and their consistency with the supply of cooperating factors of production. In the third stage, absorptive capacity depends on "the ability of any economy to utilize fully its stock of capital", which, in turn, depends on "expert management, various grades of skilled labor, a regular flow of material inputs, and markets of appropriate size to make their contribution to economic development."

^{1/} Gulhati, op. cit., pp. 246-49.

Absorptive capacity for investment is a circular concept in that there are some ways in which investment itself determines absorptive capacity. One such way often mentioned in the literature is in the quality of investment planning. As Adler says, "A well-conceived plan in which investments in various projects are interrelated can go a long way towards eliminating uncertainties. Thus, it can also raise absorptive capacity." ^{1/} Mason makes a key point in this connection, by pointing out that a low rate of return on investment is not prima facie proof that a development program is too large.

It is obvious that a development program can be too large with respect to a specific set of development expenditures, in the sense that they yield an unacceptable rate of return without being too large with respect to a more sensibly chosen set of expenditures. ^{2/}

In a related analysis Guillaumont points out that capacity to absorb foreign aid is indeterminate; it depends on the nature and magnitude of the aid inflow itself ^{3/}. A similar point is made by Boserup and Ohlin ^{4/}.

^{1/} Adler, op. cit., p. 18.

^{2/} Mason, op. cit., pp. 10-11.

^{3/} Patrick Guillaumont, "Ambiguités dans le calcul des besoins d'aide internationale au développement" in Annales Economiques, #2, 1971, Université de Clermont, Editions de Cujas, Paris.

^{4/} Ester Boserup, "Absorptive Capacity for Foreign Aid" and Goran Ohlin, "The Capacity to Absorb What" in Foreign Aid to Newly Independent Countries: Problems and Orientations, E. Boserup & I. Sachs (eds.), The Hague, 1971, pp. 3-12 and 124-131. Other authors in this volume make similar arguments.

Another factor that deserves special mention is inadequate effective demand in developing countries. Stevens, among others, stresses this factor: "The creation of productive capacity which is not induced by the existence of rewarding outlet opportunities frequently leads to a waste of scarce resources and an underutilization of the production potential." ^{1/}

Stevens attributes the "impediments on domestic demand to the lack of private and public purchasing power and the restrictions due to internal economic boundaries such as high transportation costs, unequal distribution of income, and unbalanced development." ^{2/}

There are, of course, foreign markets. But obstacles to their penetration are common on both demand and supply sides: tariff and non-tariff barriers in industrial countries, high transport costs, and high cost production on the supply side.

Ad-Eyd emphasizes the importance of aggregate demand. We outlined earlier his argument that increases in oil revenues raise investment via rises in aggregate demand. He goes on to say that:

... the dynamics of the rise in oil prices are such that a new interpretation of the concept of absorptive capacity is called for. Traditional theorizing about absorptive capacity is

^{1/} Stevens, op. cit., p. 63.

^{2/} Ibid., pp. 56-63.

supply-oriented. The minimum acceptable rate of return is predicated on the idea that investible funds are in short supply. Not enough thought was given to the impact of a sufficient increase in aggregate demand on supply elasticities. Now, preliminary indications are that aggregate demand is a factor deserving of consideration in any analysis of absorptive capacity. 1/

Eckaus offers a radically different interpretation of the nature of the limits to absorptive capacity from the ones we have considered so far. As noted above, Eckaus rejects the standard arguments on limits to rates of investment, describing them, rather, as "obstacles to be overcome in making policy." 2/ He provides an alternative explanation for the absorptive capacity constraint 3/. Essentially, he believes that since each investment project is in some sense unique, it requires a "gestation period," made up of "gestation" and "maturation" phases to reach full capacity and productivity. He argues that speed of adaptation to new projects and initial and final productivities depend on previous experience with new investments. This experience "... is a limited and wasting resource which can be created only by the act of investment itself and is the source of diminishing returns to new investment." These diminishing returns are the source of absorptive capacity constraints.

Eckaus, in fact, prefers another term to "absorptive

1/ Al-Eyd, op. cit., p. 113.

2/ Eckaus, op. cit., p. 81.

3/ Ibid., pp. 87-107.

capacity":

According to the maturation hypothesis the higher the rate of investment the lower the level of productivity in the new investment. With time and use, however, new investment projects can reach the level of productivity of seasoned projects. Thus, the limits are better described not as absorptive capacity limits but as maturation capacity constraints. They reflect the ability of the economy to bring new projects to the "rated" levels of productivity which are expected of mature projects. 1/

Eckaus presents a highly dynamic concept. The "standard" or "Adlerian" approach can indicate, in theory, a limit to the amount of investment possible at any one time, but does not tell us explicitly what impact an increase in investment will have on absorptive capacity. Eckaus implies that every increase in investment increases absorptive capacity, so an economy that is raising its rate of investment is increasing its absorptive capacity at the same time. This interesting notion has some ambiguities and is not intuitively satisfactory. It is not clear that the extraordinary rise in investment spending in oil-rich countries during the past decade has really raised their absorptive capacity - a point applicable also to Al-Eyd's arguments.

All of the writing thus far surveyed has stressed "real" factors in absorptive capacity. Financial constraints are very little considered in the mainstream of this literature. Why this is so is not altogether clear. Perhaps the

1/ Ibid., p. 89.

assumption is that productive investment increases output sufficiently to maintain budgetary and balance of payments equilibrium. In the foreign aid component of the literature, it seems to be assumed that foreign assistance can maintain internal and external equilibrium.

Some writers have stressed the budget constraint. Paul Huber, in a 1965 study, raises the problem of fiscal balance, as did Peter Heller in his 1968 Harvard thesis ^{1/}. Wolfgang Stolper gave budget constraints and recurrent cost implications of capital spending pride of place in his analysis of planning problems ^{2/}. Recurrent costs have, in recent years, become the most discussed determinant of absorptive capacity, especially in the Sahel ^{3/}.

E. Overcoming Constraints

The literature indicates ways to overcome absorptive capacity constraints that follow from the commonly stressed bottlenecks. If the problem is a shortage of a particular

^{1/} Paul S. Huber, Absorptive Capacity and Development Planning, Center for Development Planning, N.P.A., Washington, D.C., 1965. Peter S. Heller, "A Model of Public Expenditure Dynamics in Less Developed Countries: The Kenyan Case" in Quarterly Journal of Economics, Vol. 88, May 1974, pp.251-77.

^{2/} Wolfgang F. Stolper, Planning Without Facts, Harvard University Press, Cambridge, MA, 1966.

^{3/} CILSS/Club du Sahel, Working Group on Recurrent Costs, Recurrent Costs of Development Programs in the Countries of the Sahel: Analysis and Recommendations, Paris, 1980.

cooperant factor, then the natural solution is to avoid usage of that factor. But this may be no help. Mason writes that attempts to economize the scarce factor by substituting increased inputs of development expenditures (involving changes in the direction of investment, technology, or forms of organization) are apt to run into sharply diminishing marginal returns ^{1/}.

The question then revolves around the utility of foreign aid. Some, like Kindleberger, believe that practically anything is obtainable from abroad, and thus that any constraint can be overcome ^{2/}. Others, such as Millikan and Rosenstein-Rodan, assert that while foreign assistance is helpful, it is not useful or beneficial to rely on foreign aid in the long run ^{3/}.

Many of the specific ways to increase absorptive capacity are implicit in the analysis of the barriers. Stevens, for example, lists various internal policy measures to increase absorptive capacity: increasing aggregate demand through lowering internal barriers and trade barriers; government provision of utility services, industrial estates, material inputs, and managerial skills; and, the preparation of agricultural, geological and industrial surveys, the identification of investment opportunities, and the

^{1/} Mason, op. cit., p. 107.

^{2/} Kindleberger, op. cit., pp. 326-27.

^{3/} Millikan, op. cit., p. 16.

preparation of economic and technological feasibility studies to "... break out of planning and implementation constraints." ^{1/} He suggests that governments be given assistance in "...bidding and contracting procedures, in the allocation of resources, elimination of administrative restraints, etc."

A major issue in the area of measures to increase absorptive capacity is the utility of foreign aid in the form of technological assistance. Most writers believe foreign technological assistance is vital. Meier argues:

The productive use of capital assistance may depend heavily on the effectiveness of technological assistance, since the contribution of technical aid is essentially to raise absorptive capacity. Once the pace of development gains in velocity, the absorptive capacity will be higher, and foreign capacity can then be utilized more effectively. ^{2/}

While Stevens has some reservations about the utility of technical assistance, he also admits its importance ^{3/}. He believes it can increase local skills, provide operational personnel, and provide advisers. He argues that purely operational personnel are of limited use. "Unless assignments given to foreign experts include the training of local staff, their contribution will have little lasting effect." Advisers, on the other hand, "...have played a substantial role in setting the stage for increased capital formation."

^{1/} Stevens, op. cit., pp. 154-64.

^{2/} Meier, op. cit., 2nd ed., 1970, p. 287.

^{3/} Stevens, op. cit., pp. 164-71.

He notes, as do others, that there is a shortage of qualified advisers and many countries make poor use of the ones they have.

Mason gives close attention to the efficacy of technical assistance ^{1/}. He believes that much can be done to import needed human resources. For example, "...feasibility studies and market surveys for expatriate firms can ferret out domestic investment opportunities. Foreign technicians and managers can be brought in under management contracts." A distinction exists between private and public foreign aid. "Foreign private investment has been, over time, undoubtedly the most effective channel for enlarging domestic supplies of technical and managerial talent. On occasion public foreign investment can perform the same function."

After this defense of foreign aid, Mason points out serious limits to its utility. "In the course of supplementing domestic human resource deficiencies by foreign skills, there are limits that do not apply in the case of substituting foreign exchange for domestic financial resources." He explains: "...political and social constraints set limits to the number of foreigners a developing society can tolerate in advisory or supervisory positions" and asserts that "...although the tolerance level for such imports varies considerably in less developed countries, it is fairly low

^{1/} Mason, op. cit., pp. 15-18.

in all." 1/

A view we have touched on before is that correct planning of development programs is a powerful absorptive capacity constraint. Mason subscribes to this view, explaining that there are sometimes real absorptive capacity constraints but:

... more frequently, low marginal rates of returns are the result not of a development program too large to yield adequate returns given sensible development policies but of one too large for the types of investment that are actually included in the program. Perhaps even more frequently, high-yielding opportunities are present, but governments are unable or unwilling to impose the limitation on current consumption that would be necessary to permit their exploitation. 2/

The solution to this problem is to focus development programs on achieving higher rates of return. But there are obstacles to this course of action.

Orienting development programs towards high-yield opportunities involves much more than calculating probable returns at existing prices. It implies some fairly drastic changes in price policies and the structure of prices as well as the use of sensible approximations of the scarcity value of domestic capital and foreign exchange. 3/

As indicative of the general thrust of these discussions of ways to overcome absorptive capacity constraints, Adler's words on the subject seem particularly apt. "The only way to come to grips with the practical limitation of

1/ Ibid., pp. 15-16.

2/ Ibid., p. 16.

3/ Ibid., p. 18.

absorptive capacity is to devise specific measures to raise specific limitations." ^{1/} The Brandt Commission statement, fifteen years later, is not very different and provides a typical statement from the perspective of those arguing the case for massive increases in assistance to poor countries.

We are aware that many people have argued that the low-income and least developed countries cannot absorb larger amounts of capital or aid, which would therefore be wasted. But a lack of 'absorptive capacity' should be viewed as a development problem in itself: it should neither become an excuse for continuing stagnant levels of aid, nor be dismissed as a non-existent problem. Absorptive capacities have to be increased at the same time as levels of aid. The terms and procedures of aid have to be improved and made more flexible. Countries will be able to absorb more assistance if the funds are more closely related to their needs, and if they can be relied on for a longer term, without being subject to year-by-year appropriations. The expansion of program lending, alongside project lending, would speed up the effective use of aid. Absorptive capacity should also be improved with more purposeful technical assistance to identify, prepare and implement projects, and to help to operate plants and installations already established. The difficulties with absorptive capacity thus cannot be accepted as a reason for not increasing aid: they can be largely overcome by careful deployment of funds and manpower. ^{2/}

F. Conclusion

It is clear that there is no consensus in the literature on how to define absorptive capacity, and this lack of

^{1/} Adler, op. cit., p. 31.

^{2/} Brandt Commission Report, North-South: A Program for Survival, MIT Press, 1980, p. 234.

a clear definition reflects the difficulty of determining an optimum level of assistance. One school of thought revolves around the idea of determining the largest set of investment projects possible which have a marginal rate of return above some cut-off rate. A key step in this method is the determination of the cut-off rate of return, and this is a subject about which there is no agreement in the academic literature or elsewhere. The issue has not arisen in practice, since decision-making takes place at the project level; for "productive" projects a "satisfactory" rate of return is usually generated, and for others (health and education, for example) it is not required in most circumstances.

The definition of absorptive capacity as some minimal rate of return on investment has not proved operational; it has given rise to no exercises of measurement.

Those studies that have been undertaken involve an estimate of possible levels of investment based on past performance. Unfortunately, this method has limited relevance as a policy tool, despite its amenability to modelling. It pays no attention to the productivity of aid, a concept at the heart of the absorptive capacity question. A capacity to absorb investment or aid, defined and measured independently of productivity concerns, is not helpful to those seeking greater growth effects from investment or aid.

The literature is more useful in describing the limits to productive investment, and listing ways to ameliorate

these constraints. The most practical suggestion may be that of Adler: only specific solutions can solve specific investment problems. The most practical approach to determining absorptive capacity may be detailed and comprehensive evaluations of the economy of a given country in an attempt to determine where the bottlenecks are, how they can be eliminated, and whether or not it is worthwhile to do so.

ANNEX IV
BIBLIOGRAPHY

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A. Articles and Books

Adler, John H., Absorptive Capacity: The Concept and Its Determinants, Washington, Brookings Institution, 1965.

Adler's work comes closest of any to being the "basic" work on absorptive capacity. He defines absorptive capacity as "that amount of investment, or that rate of gross domestic investment expressed as a proportion of GNP, that can be made at an acceptable rate of return, with the supply of cooperant factors considered as given." He addresses the issues raised by this approach, including the concept of an acceptable rate of return, the proper way to measure benefits and costs to determine rate of return, the utility of shadow prices and the time dimension of absorptive capacity. He also discusses the limits to absorptive capacity, giving a reasonably exhaustive summary and some ways to circumvent these constraints.

Ahmad, Yusuf J., Absorptive Capacity of the Egyptian Economy, Paris, OECD, 1976.

Ahmad's detailed study of the Egyptian economy is basically descriptive. He does not explicitly define absorptive capacity, but seems to assume that the concept has a generally accepted definition. He examines various sectors of the Egyptian economy, such as transportation, communications and construction, and singles out problem areas, bottlenecks and capacities for investment. He thus does not explain how a country can optimize investment, but does give an example of how one might locate limits to absorptive capacity.

Al-Eyd, Kadhim A., Oil Revenues and Economic Growth: Absorptive Capacity in Iraq, New York, Holt Reinhart, 1979.

Al-Eyd attempts to measure the absorptive capacity of Iraq. He examines various sectors of the economy as a background. He follows the lead of Hollis Chenery (see fifth and sixth entries) in defining and measuring absorptive capacity, which, for Iraq, is "that level of gross domestic investment that the country achieved during the sample '53-'73 period." Al-Eyd explains the rationale behind this definition, produces numbers on Iraq's absorptive capacity,

then examines the impact of the rise of oil prices. He emphasizes the role of aggregate demand as a determinant of absorptive capacity.

Boserup, Ester and Sachs, Ignacy, eds., Foreign Aid to Newly Independent Countries: Problems and Orientations, Mouton, The Hague, 1971.

This volume of eight articles and two introductory essays results from a research project on "Absorptive Capacity for Foreign Aid to Developing Countries and Problems of Transfer of Techniques."

Four of the papers are of particular relevance here: E. Boserup, "Absorptive Capacity for Foreign Aid" (pp. 3-12); G. Destanne de Bernis, "Le concept de capacité d'absorption en matière d'aide extérieure aux pays en voie de développement" (pp. 68-92); Z. Dobrska, "Absorptive Capacity of Developing Countries for Foreign Aid" (pp. 93-107); and, G. Ohlin, "The Capacity to Absorb What?" (pp. 124-31).

In her summary, Boserup mentions the following points: (1) the generally accepted definition of absorptive capacity by the researchers involved is the "total cost of available projects that are likely to yield at least minimum social return"; (2) participants stressed the need to use aid "dynamically", to improve absorptive capacity itself by financing pre-investment studies, research, education and training; (3) forms of aid are critical - program aid expands absorptive capacity, which also can be reduced by "unabsorbable" aid, which creates facilities that the host country can't maintain - a large amount of aid may be absorbable despite low returns if terms are soft; (4) none of the authors is optimistic as regards the measurement of overall absorptive capacity.

Chenery, Hollis B. and MacEwan, Arthur, "Optimal Pattern of Growth and Aid: The Case of Pakistan" in The Theory and Design of Economic Development, Irma Adelman and Erik Thorbecke (eds.), Baltimore, Johns Hopkins Press, 1966.

In the course of producing a linear programming model, the authors introduce a constraint to the productive investment of external resources. They concentrate on quantifying this constraint for the model, and note that "the most convenient measure of this absorptive capacity limit is the rate of increase in investment which a country can achieve on a sustained basis." Chenery and MacEwan briefly discuss the validity of this approach, and employ some estimates of

Pakistan's absorptive capacity in investigating optimal investment and growth patterns.

Chenery, Hollis B. and Strout, Alan M., "Foreign Assistance and Economic Development: in The American Economic Review, LVI:4, September 1966.

This work is similar to the previous one. Here the investment constraint parameter is defined as a "skill limit" measured by "the highest compound rate of growth of investment for any five-year period in the past decade." This measurement is applied to thirty one less developed countries.

Eckaus, Richard S., "Absorptive Capacity as a Constraint Due to Maturation Processes" in Development and Planning, Jagdish Bhagwati and Richard Eckaus (eds.), MIT Press, Cambridge, MA, 1973.

Eckaus concentrates on the sources of absorptive capacity constraints. He believes that the conventional explanations of Adler et. al. for empirical decreasing returns to investment, focusing on a shortage of cooperant factors, are faulty. He explains the decreasing return to investment as a function of the diminishing return to the "stock of specialized skills which assist in bringing new investment projects to maturity." Thus he describes the limits to investment as "maturation policy constraints."

El-Serafy, Saleh, "Absorptive Capacity: The Demand for Revenue and the Supply of Petroleum" in The Journal of Energy and Development, Vol. 7, No. 1, Autumn 1981, pp. 73-88.

El-Serafy rejects the definition of absorptive capacity that focuses on the presence or absence of a surplus (budgetary or external accounts) in oil exporting countries. What has to be taken into account, in his view, is the level of petroleum earnings itself as well as the utility of expenditures. El-Serafy notes that the conventional definition of absorptive capacity, the ability to absorb capital productively, implies that oil exporters must regard their levels of oil exports as policy variables.

Guillaumont, Patrick, "Ambiguités dans le calcul des besoins d'aide internationale au développement" in Annales Economiques, No. 2, Université de Clermont, Editions de Cujas, Paris, 1971.

This article explores the relationship between two gap model-based estimates of aid "needs" and absorptive capacity. The author argues that estimates of aid "needs" using absorptive capacity as a criterion are unclear or unfair. He makes the following main points: (1) If absorptive capacity depends on the gaps and not the reverse, it is not at all determinate and independent of aid itself. If it is indeterminate, it is no valid criterion for aid. (2) While it is on the surface generous to define aid needs in terms of the maximum utilizable inflow, it is also rather hypo-critical to do this when the absorptive capacity is so difficult to estimate and a low estimate can serve as an excuse for reduced assistance levels. (3) Absorptive capacity is described as depending on the internal effort of the LDCs, while in fact it depends on foreign aid itself. (4) When approached in macroeconomic terms, absorptive capacity becomes equivalent to a maximum rate of growth under the assumption of a fixed capital-output ratio. But productive investment can raise this ratio over time. (5) When approached in microeconomic terms, the concept of absorptive capacity cannot easily take account of the interdependencies of aggregate investment.

Guillaumont, Patrick, L'absorption du capital, Editions de Cujas, Paris, 1971.

This is the basic work in French and is a significant contribution to the general literature. It surveys much of the pre-1970 literature in both English and French. The focus is primarily macroeconomic. Absorptive capacity is measured by "the maximum of progress-generating investment," which is further refined to mean that rate of investment which generates the highest rate of growth attainable without creating "excessive" internal and external disequilibria. The manifestations of absorptive capacity constraints are inflation, balance of payments pressure, and social unrest. Its level is determined by the availability of complementary factors: human capital, physical capital, information, and economic policies. The author concludes that macroeconomic approaches to absorptive capacity are of limited policy relevance because the key variables are poorly known and the critical relationships are extremely sensitive to the structure of investment.

Gulhati, Ravi I., "The 'Need' for Foreign Resources, Absorptive and Debt Servicing Capacity" in Capital Movements and Economic Development, John H. Adler (ed.), London, MacMillan, 1967.

Gulhati divides investment into three phases and outlines obstacles to investment for each phase. He discusses the utility of foreign technical aid in removing barriers. He proposes to measure absorptive capacity by using the incremental capital-output ratio as a test of effective utilization of capital, and discusses the optimal ICOR. He and his commentators discuss the value of the ICOR as an absorptive capacity measurement tool.

Horvat, Branko, "The Optimum Rate of Investment" in The Economic Journal, LXVIII:27, December 1958.

Horvat's "absorptive capacity" is not the optimum amount of foreign (or aggregate) investment, but a much more general concept. It is "the potential effect of the optimum adjustment of the growth rates of factors," and "the ability of individuals and of the society as a whole to manipulate the stream of output increments." Horvat considers the prime long-run determinant of this capacity to be "knowledge". He measures absorptive capacity by finding that investment path yielding a marginal efficiency of investment of zero: this is the optimum growth path. He concludes that only in a planned economy can growth be maximized.

Huber, Paul S., Absorptive Capacity and Development Planning, Center for Development Planning, National Planning Association, Washington, D.C., 1965.

Huber is one of the few writers who stresses budgetary and balance of payments constraints. He says: "in some relevant situation it is likely that financial bounds on the budget and balance of payments constrain the capacity of the recipient country to make available complementary inputs, and that the bounds, together with a constraint that all acceptable activities have a positive impact on income, determine the size of the development effort a country can undertake..."

Mason, Edward S., On the Appropriate Size of a Development Program, Occasional Papers in International Affairs #8, Harvard University Center for International Affairs, August 1964.

Mason defines absorptive capacity in a straightforward fashion as the greatest amount of foreign investment yielding a marginal return above "some socially acceptable discount rate." He discusses the impact of overestimating and underestimating the needed amount of investment funds on the productivity of investment. He discusses the source of absorptive capacity constraints, and ways of raising a low marginal rate of return. He examines the utility of foreign technical assistance and emphasizes the importance of raising absorptive capacity by a sensible development program.

Millikan, Max F. and Rostow, W. W., A Proposal: Key to an Effective Foreign Policy, New York, Harper and Brothers, 1957.

In the sections of this book dealing with absorptive capacity, Millikan and Rostow state that:

...a limit on the size of a national development program and on the number of desirable and feasible projects is set by the ability of the underdeveloped country to organize, administer, and carry out projects and to relate them to one another in such a way that the output of each project is used productively.

They settle on a rather primitive measurement method, asserting that investment can grow only by a given percentage over the first years of a development program.

Rosenstein-Rodan, P. N., "International Aid for Underdeveloped Countries" in The Review of Economics and Statistics, XLIII:2, May 1961.

Rosenstein-Rodan observes that "absorptive capacity relates to the ability to use capital productively." He asserts that absorptive capacity can be increased by some percentage (not specified) above current investment.

Stevens, Willy J., Capital Absorptive Capacity in Developing Countries, Leiden, Netherlands, A.W. Sijthoff, 1971.

Stevens' book is an in-depth study of absorptive capacity. He surveys the literature on absorptive capacity and then discusses the limits to productive investment. He examines the measurement techniques of Adler, Gulhati, Chenery, and Horvat and then provides his own, based largely on Adler. He surveys ways of increasing absorptive capacity, emphasizing regional integration as a means to increase demand for outputs.

B. Textbooks

Textbooks, in general, deal with absorptive capacity sketchily or not at all. Standard principles texts, such as Samuelson or Lipsey and Steiner, do not refer to the subject at all. Development texts, particularly the older works and editions, occasionally do. Often the concept is briefly introduced and discussed in a general sense (e.g., Meier). Only occasionally will the author devote some analysis to the subject (e.g., Hagen).

Hagen, Everett E., The Economics of Development, Homewood, IL, Irwin, 1968, Rev. ed. 1975.

The Hagen text devotes more space than most to absorptive capacity. He divides the constraints to investment into two categories, "technical" and "other", and briefly discusses the utility of foreign aid. He summarizes briefly the views of other writers on the subject, including Chenery. He discusses Chenery's methods, pointing out some flaws but judging them useful. It is representative of the trend that Hagen makes no reference to absorptive capacity in the 1975 edition of his textbook.

Higgins, Benjamin H., Economic Development: Principles, Problems and Policies, New York, W.W. Norton, Rev. ed. 1968.

Higgins, in his relatively extensive mention of

absorptive capacity, proposes that the contribution to income of incremental investment be estimated directly. Absorptive capacity is then the amount of investment possible over a given period (e.g., a five-year plan) without raising the marginal ICOR above $1/x$. He suggests putting x close to zero. Absorptive capacity is then "the amount of investment that can be undertaken, over a five-year planning period beginning from the present, without reducing the addition to perpetual income below three percent."

Kindleberger, Charles P., Economic Development, New York, McGraw-Hill, 2nd ed. 1965, 3rd ed. 1977.

Kindleberger pays some attention to absorptive capacity in his second, 1965, edition. He presents the concept in terms of a marginal value product curve for capital and briefly discusses the issue of the shape of this curve. The concept has limited meaning, he argues, because almost all constraints could be overcome by sufficient external aid. Perhaps for this reason he drops all references to absorptive capacity in the third edition of his textbook, co-authored with Bruce Herrick.

Meier, Gerald M., Leading Issues in Economic Development, New York, Oxford University Press, 2nd ed. 1974, 3rd ed. 1976.

Meier makes many brief references to absorptive capacity in both the second and the later, 1976, editions. He briefly lists the constraints to productive investment, and also suggests that technical assistance can be very helpful in lifting these constraints.

Waterston, Albert, Development Planning: Lessons of Experience, Baltimore, Johns Hopkins Press, 1965.

Waterston devotes several pages to a relatively detailed discussion of the symptoms of investment constraints, such as delays, high costs, and low yields. He then spends several pages explaining the reasons for these problems, describing absorptive capacity constraints such as a lack of engineering skills and inadequate preparatory work on projects.