

Assessing the Economic Value of Credit Guarantees

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INTRODUCTION

Government justifies its intervention in credit markets by claiming that markets fail due to high transaction costs and asymmetry of information. Such intervention programs include special loan programs, government-funded wholesale credit and credit guarantee schemes. The liberalization of commercial banking in the 1990s, especially branch banking, diminished the need for government to lend directly to target enterprise groups. Land Bank of the Philippines and Development Bank of the Philippines, government banks that have not been privatized, implement the wholesale credit programs of the government. These government development finance institutions administer credit guarantees to target beneficiaries through financial institutions. Except for contingent credit facilities to large corporate clients, a private credit guarantee market does not exist. Government credit guarantee institutions assist small-scale enterprises and other high-risk credit markets that are targets of government development policy. Because the government subsidizes guarantee institutions to support beneficiaries with such adverse characteristics, it stands to benefit from a better understanding of the economic advantages of credit guarantees through reforms in credit guarantee policies and delivery systems.

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Deriving the economic value of a credit guarantee to creditors is the focus of this article. It is an important question because credit guarantees do not work unless creditors derive economic benefits from accessing those guarantees in the first place. This article shows that understanding the prerequisites for the economic value of guarantees to creditors could help the government design incentive-compatible guarantee policies and measure the gross social economic benefits of credit guarantee programs. Current research has not offered a clear and operational concept of the private economic benefits of credit guarantee, a requirement that can help government estimate its social benefits. There is also a need to develop better methods of assessing credit guarantee programs. In the end, a better understanding of the economic value of a credit guarantee and the development of improved assessment methodologies can help policymakers formulate, implement and evaluate credit guarantee programs.

REVIEW OF PRIOR STUDIES

Prior studies assume that credit guarantees have economic values because they address imperfections in the financial market, such as credits to rural and small-scale enterprises (SSE). Llanto (1989) identified factors or imperfections that impede lending to SSEs, namely: the inability of banks to understand the borrowers' projects and the high transaction costs for marginal borrowers. His study found rural financial markets as highly segmented with banks operating like a cartel in small market areas. In response to problems of market imperfections and the relative market power of banks, Philippine monetary authorities began to liberalize the banking system in 1985. Magno and Meyer (1998) found that government intervention through credit guarantee complements the liberalization of the financial sector. Credit guarantees encourage banks to increase their loans to small-scale enterprises and to agricultural enterprises. However, their study did not analyze how

credit guarantees affect the credit decisions of banks. The Agricultural Credit and Policy Council (ACPC) saw credit guarantees as a way of encouraging private banks to extend credits to agricultural enterprises, a sector that banks considered as high-risk (ACPC 1991). It envisioned credit guarantees as a substitute for the collateral requirements of banks. Another study cited the need for credit guarantees to support three types of loans, namely: (a) those with insufficient collateral, (b) those of borrowers with insufficient credit experience and (c) for start-up projects (Esguerra 1988).

Meyer (1992) made a significant comment regarding the focus of assessment of loan programs and their impact on beneficiaries. He noted that donor institutions supporting such loan programs find difficulties in measuring the impact on the final beneficiaries. Consequently, he pointed out that a currently accepted method is to assume a positive impact if the beneficiaries access the loan program, fully repay and repeat the transaction cycle. The interesting implication of such an approach is that it measures the impact of a credit program from the viewpoint of the creditor rather than the beneficiary. The ACPC's review of credit guarantee programs in 1990 found these programs expensive and ineffective at stimulating loans to new borrowers in target groups (Llanto et al. 1991). Another review by the Credit Policy Improvement Program (CPIP) in 1997 similarly found that credit programs were highly subsidized and ineffective at generating loans to new borrowers.

A study by Orbeta et al. (1998) assessed three loan guarantee programs by reviewing the financial and other performance indicators of the guarantee institutions and programs as well as the perceptions/motivations of program participants. They found that the loan guarantees' reach is too small while existing guarantee programs are heavily subsidized. Their study provides a framework for identifying the intended social and private benefits of a guarantee program. The social benefits refer to new loans made on the strength of a guarantee while the private benefit is the reduction in risk of

the creditor. It concluded that private benefits are small compared to the high social costs of an inefficient and subsidized delivery system. The study further concluded that increasing the reach of guarantee programs under current institutional arrangements is not sustainable. This conclusion heightens the need to further study the economic benefits of a guarantee program to creditors and to guarantors. So long as private economic benefits are present, government can respond to the call of the Orbeta et al. (1998) study for sustainability by developing appropriate strategies to accelerate the growth of new loans to target groups and by restructuring implementing institutions to eliminate/reduce subsidies.

Levitsky and Prasad (1987) reviewed credit guarantee schemes in 10 developed and 18 developing countries worldwide. Their review covered the objectives, operations and assessment of the "additionality" and delivery costs of credit guarantee programs. They reported that the successful ones like the US, the UK and Korean schemes generated "additionality" but required large subsidies for either administrative costs (US and Korea) or adverse risks relative to premium revenues (UK). Interestingly, limitations in impact and the presence of subsidies persist even in the US where a favorable environment exists in terms of available inexpensive credit information, reliable financial reporting by companies, experienced bank credit evaluators and a large pool of SSEs in diverse industries. Eliminating the administrative layer to reduce subsidies may not be the simple answer either. For example, in the UK, a unit at the Department of Industry with only two to three staff, administers the guarantee scheme in a system where banks perform all loan evaluations and guarantees are automatically granted upon approval of the loan. The involvement of government institutions at both ends of guarantee transactions does not invalidate the success of a guarantee program. Levitsky and Prasad (1987) noted that by all accounts, Korea's guarantee program has been a success even when its guarantees were made mainly to loans by three government-owned banks. Overall, the 28-country study suggests

that because guarantee institutions are expected to fulfill inherently social goals, the more important consideration is the degree of success of these institutions in reaching out to target groups and in creating new loan opportunities.

In sum, prior studies assume that credit market imperfections justify credit guarantees but further study is needed to analyze how they work. There is a need to understand how guarantees benefit a creditor and its importance in a creditor's decision. Various studies conclude that current credit guarantee programs are heavily subsidized and have weak impact on their target groups. However, these studies did not consider that when government mandates guarantee institutions to serve target groups, it typically expects to incur subsidies. The key question is whether the program generated sufficient benefits to justify the (inevitable) subsidies. Past evaluations of guarantee programs have not recommended reform strategies for improving reach and for institutional restructuring that could minimize subsidies.¹ This article addresses these gaps by defining the private economic benefits, recommending key reforms in the screening policy of credits and empirically assessing the potential gross economic benefits of a credit guarantee program.

ECONOMIC BENEFITS OF A CREDIT GUARANTEE

Creditors evaluate business loans based on the borrower's reputation and capacity to pay. The capacity to pay depends on whether the borrower uses the credit profitably. Being mere suppliers of funds, creditors could not competently assess the risk of the borrower's project in the presence of market imperfections like high cost of gathering information, small borrowers and unfamiliarity of

¹ For example, the study of Orbeta et al (1998) recommended an audit of the three guarantee institutions "to document the extent to which future guarantee claims and loan losses are actually booked (sic). The results of these audits could then be used by the Secretary of Finance to make decisions about the future of such schemes. That decision may involve liquidating the guarantee programs and redeploying the remaining assets to other efforts that have a more positive impact on poverty reduction" (page 27).

creditor with the borrower's business. Creditors would then be unwilling to extend credits unless the borrower submits a collateral or guarantee. Agency theory, as defined by Jensen and Meckling (1976), is applicable in creditor-borrower relationships where a borrower acts as an agent of the creditor (principal) in investing the funds and must repay the loan while a creditor aims only to get full repayment of its principal and interest. Since a borrower knows more about its business than its creditor, it has an incentive to undertake risky projects. When risky projects succeed, the creditor only gets a fixed return while the borrower claims the residual. But when risky projects fail, a borrower loses its fixed capital and passes on residual losses to the creditor. The consequences of agency problem are a tendency for excessive borrowing by firms and a tendency for a creditor to extend less than the optimal level of loans. The adverse incentive that creditors face in such agency contracts is called the *moral hazard problem*.

To address the moral hazard problem, creditors monitor the borrower's activities, require collateral and impose loan covenants that provide them rights similar to those of equity holders in case of default. If the business fails and causes the borrower to default, the creditor liquidates the collateral. Thus, collateral helps creditors minimize the moral hazard problem by making loan repayment independent of business performance. A guarantee substitutes for a collateral because a guarantor pays the loan in case the borrower defaults regardless of the borrower's business performance. However, a moral hazard problem likewise exists in guarantee contracts. A guarantor does not know the borrower and relies on the creditor to evaluate the borrower's credit worthiness. The creditor, being the beneficiary of the guarantee, does not have an incentive to be a diligent evaluator. This agency problem that is inherent in all insurance (or guarantee) contracts is the economic rationale behind the guarantor's requirement of a "deductible" to share the risk with the creditor. An optimal guarantee contract partly exposes a creditor to loan default risks and induces it to exercise care when evaluating a borrower.

Creditors have a central role in the credit guarantee process. As conduits of guarantees to target beneficiaries, they assume the primary risk of the loan. A guarantee program could not be effective unless it generates an economic incentive for the creditor to lend to target borrower groups and to take the guarantee. The goal of a sound credit guarantee program design is to adopt program implementation policies that align the economic incentives of the guarantor and the creditor so that they simultaneously achieve their respective social and private objectives. In agency theory, policies that achieve such alignment of interest are called *incentive compatible* policies.

The total economic value of a credit guarantee is equal to the sum of the improvement in the respective welfares of the guarantor, the creditor and the borrower. The guarantor's welfare function is equal to actual revenues less the costs of administering the guarantee program. The guarantor controls the viability of its guarantee operations by: (a) adjusting the premium; (b) choosing the level of guarantee risks; and (c) controlling costs. Similarly, the borrower includes an explicit cost of the guarantee in its analysis of the project's viability. The benefits and costs to the creditor are not as explicit and need further analysis.

A creditor's loss function depends on the loan amount, L , and collateral value, C , and is defined as:

$$(1) W_c = L - C$$

Loan default causes a creditor to call the guarantee. Default is an uncertain event with a probability distribution. To simplify the analysis, assume that there are only two events: either the loan is fully paid (by the borrower or in case of default, from sale of collateral with value that equals the loan amount) or the borrower defaults with no collateral. For simplicity, assume a Bernoulli distribution for these two events with probability $p > 0$ for full loss and probability $(1 - p)$ for full payment. Under these assumptions, the expected value

and variance of a creditor's loss function in equation (1), respectively, are:

$$(2) \quad E(W_c) = p(L - C) \\ \text{Var}(W_c) = (1 - p)pL^2 + (1 - p)(-pL)^2$$

A creditor's welfare without the guarantee is represented by the loss function W_c in Figure 1. Suppose a creditor accesses a credit guarantee and takes additional collateral. Following current practice, suppose further that the guarantee contract requires the guarantor and the creditor to share claims on the collateral according to their relative risks. The question is whether this guarantee scheme improves a creditor's welfare. Under a guarantee contract, a guarantor pays, in the event of default, an amount equal to a fixed percentage of the loan. The creditor absorbs a loss equal to the deductible. The loss function of a creditor with a credit guarantee, with a deductible denoted as d , is:

$$(3) \quad W_g = d(L - C) \quad \text{where } 0 < d < 1$$

Algebraic and graphical methods facilitate the derivation of necessary and sufficient conditions for a guarantee to improve a creditor's welfare, and thus, to have economic value. With a Bernoulli distribution for the loan events, the expected value and risk as measured by the variance of the creditor's loss are, respectively:

$$(4) \quad E(W_g) = pdL \\ \text{Var}(W_g) = p(dL)^2(1 - p)^2 + (1 - p)(pL)^2$$

A creditor's welfare improves if either its expected loss or variance of loss is higher without the guarantee, than with a guarantee. This statement is defined in algebraic terms as follows:

$$(5a) \quad \Delta E(W_{c-g}) = E(W_c) - E(W_g) \geq 0 \text{ and}$$

$$(5b) \quad \Delta \text{Var} (W_{c-g}) = \text{Var} (W_c) - \text{Var} (W_g) \geq 0$$

with a requirement for strict inequality in either equation if one were to show strict Pareto improvement.

Deducting equation (4) from equation (2) yields a strict inequality in both equations:

$$(6a) \quad \Delta E(W_{c-g}) = (1 - d) pL > 0$$

$$(6b) \quad \Delta \text{Var} (W_{c-g}) = (1 - d) [(1 - p^2) pL^2 + (1 - p) p^2 L^2] > 0$$

The results show that a guarantee improves the creditor's welfare because it simultaneously reduces both the expected amount and risk of loan loss. Equation (6a) states that the economic benefit of a guarantee is the expected value of the guaranteed portion of the loan. The expected net benefit is equal to this amount less the guarantee fee and any transaction costs.² Equation (6b) states that a guarantee decreases the risk of the creditor, defined as the variance of loss. A creditor that wants to reduce risk while at least maintaining expected profits will strictly prefer to accept a guarantee contract for its loan.

A graphical analysis examines the loss functions with and without guarantee to reveal the sources of a guarantee's economic value. The change in creditor's welfare due to the guarantee is represented by the difference in equations (1) and (3):

$$(7) \quad \begin{aligned} \Delta W_{c-g} &= W_c - W_g \\ &= (1 - d) (L - C) > 0 \quad \text{if } C < L \end{aligned}$$

² In practice, a creditor usually passes on the cost of the guarantee to the borrower.

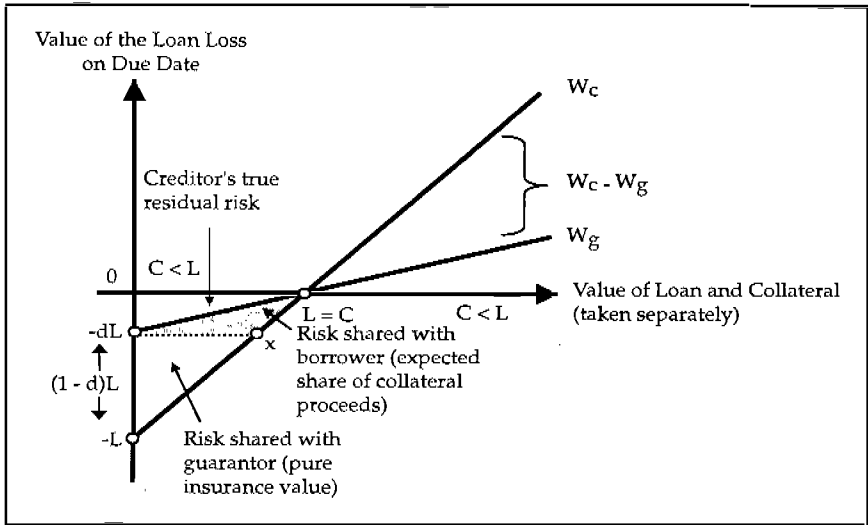


Figure 1. Components analysis of the economic value of a guarantee to a creditor.

Equation 7 states that a necessary and sufficient condition for a guarantee to have positive economic value to a creditor is insufficient collateral.³ Figure 1 presents the welfare function in Equations (1) and (3) as loss functions (i.e., negative values). The y-axis measures the loan loss on due date that is assumed to range from default ($-L$) to full payment (0). The x-axis measures the values of the loan and collateral taken separately. Equations (1) and (3) are equal at the point $L = C$ where $W_c = W_g = 0$, i.e., a guarantee has zero economic value when the loan is fully covered by collateral. To the left of that point is the region $C < L$ where guarantee has positive economic value. In Figure 1, the area $\{-L, 0, L\}$ represents the total expected loss faced by a creditor. The total benefits of a guarantee are composed of pure insurance value and risk-sharing benefit, defined as follows:

³ To show sufficiently, assume that $C \geq L$, then $\Delta W_{c-g} \leq 0$.

a) *Pure Insurance Value.* By insuring the creditor from the loan loss, a guarantee limits a creditor's maximum nominal loss equal to the deductible amount, dL . The creditor's *expected* total loss is represented in Figure 1 by the area $\{-L-dLx\}$.

b) *Risk-Sharing Benefit.* Allowing a creditor to require a collateral (in addition to a guarantee) enables it to share part of its deductible risk with the borrower, represented in Figure 1 by the area $\{-dLxL\}$. A creditor gets back part of its deductible by taking a pro rata share in the proceeds of the collateral.

To algebraically solve for the pure insurance value of a guarantee, suppose the creditor is not allowed under the guarantee contract to take any collateral. The creditor then incurs a loss in the event of default equal to the deductible in Equation (3). Solving for the change in welfare as in Equation (7) with $C = 0$ yields the result that the guarantee has a positive economic value equal to the guaranteed portion of the loan, or the segment $\{(1-d)L\}$ in Figure 1. The expected economic value of the guarantee is equal to the probability of default times this guaranteed portion of the loan.

The creditor's true residual expected loss (i.e., the amount that is not covered by the guarantee and the collateral) is represented in Figure 1 by the area $\{-dL0L\}$. The special case of an unsecured loan ($C = 0$) presents the maximum potential loss to the creditor equal to the deductible, $-dL$. Figure 2 summarizes the welfare level of the creditor at various levels of collateral. The economic value of a guarantee is negative when $C > L$ because in that case, the guarantor does not have any risk to insure in the first place and a creditor may even "gain" from the sale of the borrower's asset.⁴

⁴ The graphical analysis shows the limitation of the simple probability distribution used in the algebraic approach. The algebraic model calculated the value of guarantee assuming only two Bernoulli events and excluded the potentially important case of $C > L$. Where collateral value exceeds loan value and if this condition is of sufficiently high probability, a guarantee may have negative economic value. In that case, a guarantee is superfluous because creditors could sell collateral whose value exceeds the loan value.

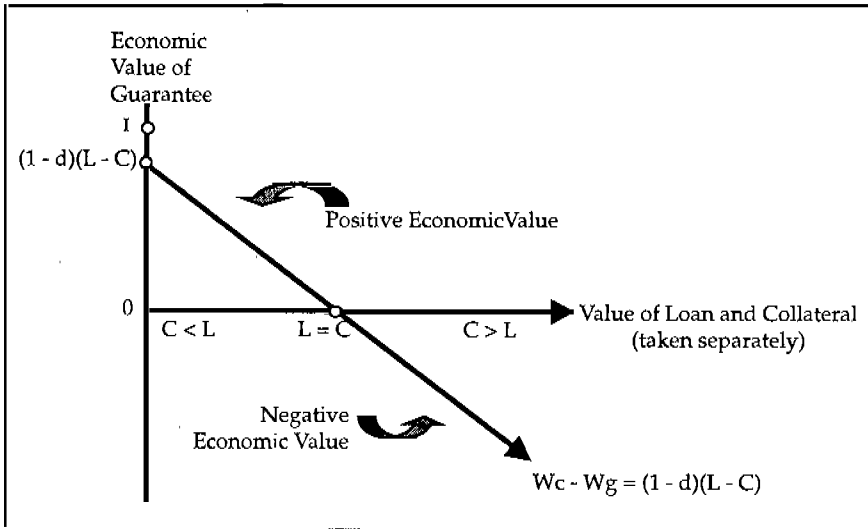


Figure 2. Economic value of credit guarantee to a creditor.

In sum, the necessary and sufficient conditions for a credit guarantee to have a positive economic value under conditions of uncertainty and moral hazard are: (a) insufficient collateral and (b) a preference by creditors for reducing risk while at least maintaining expected returns. Empirical studies should then focus on degree of collateral coverage of loans and on risk management policies of creditors.

EMPIRICAL ASSESSMENT OF THE GROSS SOCIAL ECONOMIC VALUE OF A CREDIT GUARANTEE

A credit guarantee directly benefits creditors and indirectly benefits borrowers. By enabling creditors to pass on part of the loan loss risk to a guarantor and to borrowers, guarantees increase the supply of credit to borrowers who could not put up sufficient collateral. After proving that collateral deficiency indicates that a guarantee has a positive private economic value, the empirical assessment assumes that the *upper limit* of the "additionality" of credit guarantee is equal to the sum of zero collateral and collateral-deficient loans. Finally, one can explain differences in impact of a

guarantee program by comparing the risk preferences of different types of creditors as shown in their collateral policy.

The benefits of credit guarantee are illustrated in an analysis of the guaranteed loans portfolio of the Guaranteed Fund for Small- and Medium-Scale Enterprises (GFSME) as of yearend 1991. GFSME guarantees credits granted by various financial institutions (FIs) to small-scale enterprises (SSEs). Government industrial development policy wants SSEs brought into the mainstream credit market. Creditors have difficulties managing the risk of credits to SSEs because they are undercapitalized, do not have credit experience and could not offer sufficient collateral. GFSME guarantees up to 85 percent of an FI's loans to qualified SSEs or a minimum deductible of 15 percent. Since its charter fixed its guarantee fee rate, GFSME manages its risk by choosing the level of guarantee. GFSME allows an FI to require a borrower to put up collateral. In case of loan default, the FI forecloses and sells the collateral and shares with GFSME the proceeds according to their guarantee-to-deductible ratio, e.g., 85 to 15 percent.

Data used in the study came from the entire portfolio of guaranteed loans of GFSME as of yearend 1991, consisting of 481 loans amounting to a total of P876.2 million. GFSME classified the guaranteed loans according to FI type, geographic region of the borrower, industry category, loan amount and estimated value of collateral. The data include five types of FIs, namely: commercial banks (KBs), special government banks (SGBs, primarily Land Bank and Development Bank of the Philippines), private development banks (PDBs), nongovernment organizations (NGOs) and rural banks (RBs). A summary of amount and number of loans with collateral values is shown in Table 1. Commercial banks, SGBs and PDBs represent the largest creditor groups in terms of total loan amounts, number of loans and average loan size.

KBs and PDBs required the highest collateral values relative to loans but their wide variances indicated that they also granted a significant number of collateral-free and collateral-deficient loans.

Table 1. Loan and collateral values by type of financial institution (GFSME, December 31, 1991)

Financial institution (FI)	Number	Loan		Average loan size (thousand)	Value of Collateral (thousand)	Collateral per loan		Average collateral-to-loan ratio (percent)	Collateral-to-loan ratio	
		Total (thousand)				Mean (thousand)	S.D. (thousand)		Mean (percent)	S.D.
Commercial Bank	141	321,752.5		2,281.9	366,235.5	2,597.4	2,977.7	113.8	134.9	135.3
Private Dev't. Bank	119	186,593.3		1,568.0	208,200.3	1,749.6	1,438.4	111.6	120.9	99.3
Rural Bank	28	25,747.0		919.5	22,396.9	799.9	1,012.6	87.0	82.8	48.0
Special Gov't. Bank	128	300,195.0		2,345.3	98,177.9	767.0	1,577.7	32.7	40.6	53.9
Nongov't. Organization	65	41,915.8		644.9	4,111.1	63.2	370.1	9.8	8.5	35.8
	481	876,203.6		1,821.6	699,121.7	1,453.5	2,155.9	79.8	86.0	106.0

These types of banks tend to be more risk-averse and they expect the high cost of liquidating foreclosed collateral. SGBs and NGOs have low collateral-to-loan ratios indicating a higher degree of tolerance for risk and less reliance on collateral.⁵

The previous analysis raises two empirical questions, namely, do FIs differ in the way they manage their risk through guarantee and collateral requirements and does a guarantee create new credit opportunities (the so-called “additionality”)? The first question was addressed by regressing collateral against loan size as an independent variable and FI type as a dummy. The regression model follows observed practice by creditors of requiring collateral depending on their risk management policy and loan amount. The regression results are shown in Table 2.

The highly significant overall F-statistic and coefficient of determination indicate that the regression explains most of the variations in collateral requirements of FIs. The t-statistics for all dummy variables for FI type are likewise significant, suggesting that FI types differed in their risk management policy.⁶ The coefficients of loan amount and dummy variables are of the expected signs and are statistically significant. Collateral is positively related to loan amount and dummies for KB and PDB, indicating that these two FI types require higher collateral as a matter of policy. Collateral is negatively related to the dummies for NGO and SGB, associating these two FIs with lower collateral requirements. These statistical

⁵ A more precise estimate of the average relationship between collateral and loans was obtained by regressing collateral against loans for each FI type with the regression constant forced to zero. All regression equations had highly significant overall F-statistics and R². Interpreting the coefficients of the loan value as the statistical estimate of the collateral-to-loan policy of each FI type, KBs and PDBs came out as requiring higher levels of collateral compared to SGBs and NGOs. The results of the regression are summarized in terms of their coefficients of loans with parenthetical notes on t-statistics and overall F, as follows: KB: 1.05 (22.2, 494), PDB: 1.01 (22.9, 535), SGB: 0.15 (5.1, 26.5), NGO: 0.13 (3.2, 10.1) and RB: 0.88 (10.3, 106).

⁶ The regression excluded the dummy variable for rural banks, the FI group with the least number of loans, to avoid multi-collinearity.
variable: FI type.

results support the hypothesis that risk-management policies differed across FI types.⁷

The second empirical question concerns the “additionality” of a guarantee. “Additionality” is the amount of loan that a creditor has in its portfolio that it would have rejected were it not for the guarantee. However, this benefit is not observable because the event did not happen. The results of previous economic value analysis suggest that the total amount of collateral-free and collateral-deficient loans is an appropriate estimate of the upper limit of the incremental loan opportunity generated by the guarantee “additionality”. An analysis of collateral levels of FI loans is shown in Table 3. Guaranteed collateral-free loans amounted to about P183.5 million or 21 percent of all FI loans. Among the different FIs, NGOs and

Table 2. Factors explaining differences in collateral requirements among types of financial institution (FI)

Variable	Coefficient	t-statistic	Overall F	Adjusted R ²
				0.36
Loan Amount	0.3579	12.101**	55.8**	
Dummy 1: Commercial bank (KB)	1,309,867	3.658**		
Dummy 2: Private development bank (PDB)	717,576	1.984**		
Dummy 3: Nongovernment organization (NGO)	-638,324	-1.642*		
Dummy 4: Special government bank (SGB)	-543,205	-1.504		
Constant	470,751	1.443		
* Significant at 0.10	** Significant at 0.001			

⁷ It is assumed that the regression captures the factor, risk management policy, in the variable: FI type.

SGBs have the highest collateral-free loans in proportion to their total loans. Total guaranteed loans that are partly covered by collateral amounted to about P272.5 million or 31 percent of all FI loans. The overall average collateral-to-loan ratio for collateral-free and deficient loans was 23 percent. Altogether, total collateral-short loans amounted to about P454 million or 52 percent of all FI loans. This result is consistent with the findings in Orbeta et al. that the actual impact of guaranteed programs in terms of reach to target borrowers is only a subset of the total guarantee portfolio of these institutions. Only about half of the actual guaranteed loans of GFSME in 1991 generated economic benefits to FIs and these benefits were concentrated in SGBs and NGOs. The limited impact could also be because of inadequate safeguards in determining whether or not loans would have been made without the guarantee and in preventing any attempt by FIs to obtain guarantees for loans to non-target groups.

The differences in risk management policies of FIs are evident in their patterns of collateral-to-loan ratios as shown in Figure 3. NGOs and SGBs stood out because collateral-free and collateral deficient loans comprised 85 and 94 percent of their loans, respectively. These FIs relied on GFSME's guarantee to manage their credit risks and accounted for more than 60 percent of total benefits.⁸ The relative importance of SGBs and NGOs suggest that under current guarantee program structures, institutional mandates, more than market incentives, drive access to credit guarantees. KBs and PDBs required more collateral and had larger loans than other FI types. KBs were willing to give collateral-free terms for small loans averaging P1.6 million but required more collateral for larger loans,

⁸ An issue can be raised regarding the policy of guaranteeing NGOs because many NGOs are not sustainable institutions. Similarly, the welfare effects may get obscured if government institutions guarantee loans of government banks. As earlier noted, Levitsky and Prasad reported that Korea's guarantee scheme is a success although guaranteed loans are made by government banks. Nevertheless, guarantee transactions between government guarantee institutions and SGBs may not be market-oriented considering that the government subsidizes and directs the operations of both institutions.

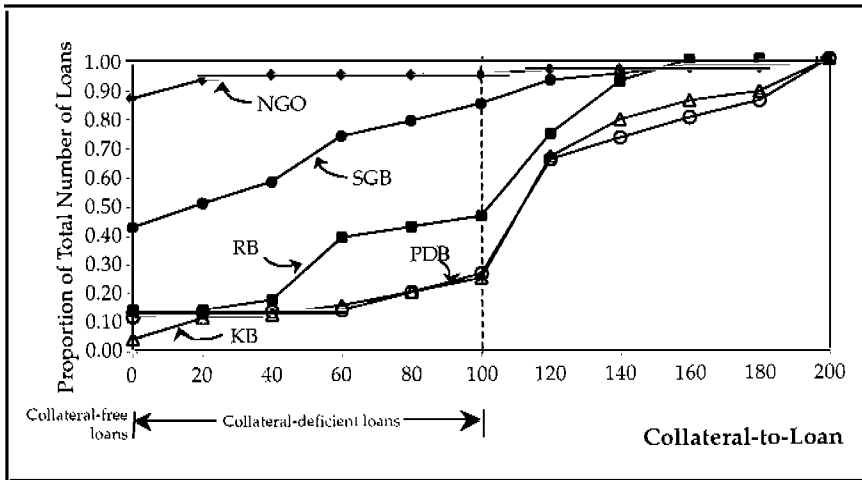
Table 3. Analysis of collateral levels of guaranteed loans, by type of financial institution (GFSME, December 31, 1991)

Financial institution (FI)	Collateral-free loans			Collateral-deficient loans			Total collateral-deficient or deficient loans				
	Amount (in million pesos)		% of Total for each FI	Amount (in million pesos)		% of Total for each FI	Collate ral-to- loan ratio	Amount (in million pesos)		% of Total for each FI	Collateral- to-loan ratio
	Total	Average		Total	Average			Total	Average		
Commercial bank	27.7	1.6	8.6	71.1	3.7	22.7	73.0%	98.9	2.7	31.3	38.5%
Private dev't. bank	1.7	1.7	0.9	41.6	1.7	22.3	51.5%	43.3	1.4	23.2	42.9%
Rural bank	4.1	1.0	15.9	7.2	0.8	27.9	55.9%	11.3	0.9	43.8	38.7%
Special gov't bank	119.5	1.0	39.8	142.0	2.6	47.3	46.3%	261.5	2.4	87.1	23.0%
Nongov't. organization	30.5	0.5	72.8	8.8	1.8	20.9	11.3%	39.3	0.6	93.7	0.9%
	183.5	1.3		272.5	2.4		51.0%	454.4	1.8		23.0%
Percent to total all FIs	20.9		31.1		52.0						

e.g., those averaging P3.5 million. The total collateral-free and collateral-deficient loans of KBs and PDBs amounted to only 31 and 23 percent of their respective loan balances but still accounted for about a third of total "additionality." This finding suggests that although traditionally risk averse, collateral-oriented FIs can contribute to a program provided that the guarantee institution has an appropriate screening policy.

SUMMARY AND CONCLUSION

This article analyzes how a credit guarantee confers private benefits to creditors and proposes reform policies and related assessment measures in order to make a credit guarantee a socially beneficial intermediation instrument. To encourage prudent lending, a guarantor requires a creditor to accept a co-insurance clause called a deductible. To the extent that it requires a collateral on top of a guarantee, a creditor transfers part of its deductible risk to the borrower. The analysis establishes that the necessary and sufficient conditions for credit guarantee to have a positive



Note: KB-commercial bank; PDB-private development bank; RB-rural bank; SGB-special government bank; NGO-nongovernment organization

Figure 3. Patterns of collateral-to-loan requirement by type of financial institution (GFSME, December 31, 1991)

economic value to a creditor are: a) insufficient collateral to cover loan loss and b) a creditor's risk aversion. A credit guarantee has a positive economic value to a risk-averse creditor if and only if, it bears part of the risk of loan loss. Thus, the recommended policy that shall be incentive-compatible to both guarantor and creditor is to require that the guaranteed loan be either collateral-free or collateral-deficient. Such policy aligns the private economic benefits of a creditor with the intended social economic benefits of a credit guarantee.

The economic value analysis suggests two hypotheses for empirical testing: (a) *Conduit Effect Hypothesis*: do differences in risk management policies of FIs influence the impact of guarantee program, and (b) *"Additionalty" Hypothesis*: does a guarantee program expand the loan opportunities of borrowers in target groups. An analysis of GFSME-guaranteed loans in 1991 indicated that FIs significantly differed in terms of their risk management policy as measured by apparent collateral requirements. KBs and

PDBs require higher average collateral-to-asset ratios than SGBs and NGOs. About half of GFSME's portfolio in 1991 can be considered as the upper limit of the estimated "additionality" generated by the guarantee program. SGBs and NGOs accounted for about 60 percent, while KBs and PDBs contributed about 30 percent, of the benefits. These findings suggest that guarantee programs have a limited reach, implying a need for continuing subsidies. The government should then institute radical institutional restructuring and other policy reforms to increase reach and reduce subsidies.

There are several implications for government guarantee institutions and policymakers. First, guarantee institutions should use the FIs' collateral requirement and risk management policy as criteria for targeting and screening their participation. This implies that guarantees should only be granted to loans with less than 100 percent collateral coverage. Second, the guarantee institutions should strengthen their review and approval policy and procedures to ensure that guarantees are given to loans that would not have been made due to collateral deficiency. Third, to expand reach to target borrowers, guarantee institutions should seek the participation of FIs that want to use guarantees to manage their lending risks. The study's findings indicate that guarantee institutions should cast a broad net because even collateral-oriented FIs like KBs and PDBs grant collateral-deficient loans and can substantially contribute to program benefits. Fourth, to reduce subsidies, government should consider restructuring the guarantee institutions from the present system of individual guaranty approvals to wholesale guarantee operations. This would minimize the number of staff required to oversee guarantee operations. This shift shall require the guarantee institution to focus on strengthening the implementation guidelines to assure "additionality" and to allow most loan evaluation tasks to be performed by FIs. Fifth, policymakers should adopt a more liberal definition of "additionality" to encompass both collateral-free and collateral-

deficient loans. For these types of loans, creditors derive economic value from a guarantee and borrowers value the guarantee enough to pay the guarantee fee.

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