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Abstract

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1. Introduction

State-financed guarantee funds have a well-diserved bad name among economists. For decades they were hallowed by governments the world over as necessary to overcome credit market imperfections. But results have been bad and most of the time state-financed guarantees have led to massive waste of resources and non-performing loans. This paper, however, studies a seemingly successful guarantee program, Chile's Fogape. The default rate of firms backed by public guarantees is very small and not higher than those of comparable firms, the fund seems to be sustainable and there is evidence suggesting that guarantees have increased access to credit. What explains this apparent success?

The standard policy argument in favor of guarantees is that they correct market failures which exclude creditworthy firms from the credit market. These can be classified in four groups[1]. First, they can overcome collateral constraints and compensate for low profit margins, thus increasing access to credit (also called *additionality*). Second, they offset the risks of lending to small and microborrowers. Third, they address information constraints. Last, they improve the productive efficiency of borrowers and induce learning.

Yet, as is well known, this view is somewhat naive and ignores that one of the main roles of banks is to tell apart "good" borrowers (the hard-working, able and honest) from "bad" borrowers

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[1] This is basd on Gudger (1998).

(the lazy, incompetent or dishonest). Surely some creditworthy firms are excluded by asking for collateral. But that is the price for lending to good borrowers most of the time, thus making the credit market viable. Can one design a public guarantee program ensuring that guarantees end up backing loans to only good but excluded borrowers?

We begin with a formal analysis. We argue that a program like Fogape makes sense when banks have enough information to distinguish between good and bad borrowers and a preexisting distortion excludes some good borrowers that otherwise banks would like to finance. In this case, we argue that the preexisting "distortion" is caused by prudential regulation, which increases the cost of lending to borrowers who have no guarantees.[2]

Based in these two premises we build a model with good and bad borrowers. We show (the fairly obvious) result that an unbounded guarantee fund (i.e. in one that any loan is fully guaranteed) will be abused by the bank. Of course, good borrowers that were previously redlined now receive credit; but so do bad borrowers. Moreover, the bank earns more money by substituting private collateral for a public guarantee. Hence, an unbounded guarantee fund stimulates both the financing of bad borrowers and the substitution of public for private guarantees.

We then study the characteristics of a guarantee program that reaches only good borrowers who were previously excluded by banks[3]. The main result is as follows: on the one hand, one should grant a very high individual coverage rate, close to 100%; but, on the other hand, the total amount guaranteed by the public fund should be "small". We also show that as the individual coverage rate falls, substitution of public for private guarantees increases.

What is the economics of these results? Consider first why the individual coverage rate should be small. A bank can use a public guarantee for at least two different purposes. On the one hand, it can back a loan of a good borrower with little illiquid wealth who cannot post much collateral and is too expensive to be financed; in this case, the public guarantee fosters access to credit. On the other hand, it can use the public guarantee to substitute for the collateral posted by a borrower with enough illiquid wealth, extracting the higher surplus through a higher interest rate; in this case the public guarantee just substitutes for private ones. Therefore, the allocation of the guarantee will depend on which use increases bank profits the most.

Now when the individual coverage rate is small, it is more profitable for the bank to use the public guarantee to fully collateralize borrowers with enough illiquid wealth who would receive credit without a public guarantee, and extract the additional surplus with a higher interest rate.

[2] Of course, we are aware that prudential regulation is justified for other reasons. One might argue that one should remove the distortion by relaxing prudential requirements so that good borrowers with little collateral may receive credit. Nevertheless, prudential risk assessment must be based on verifiable (or hard) information. For obvious reasons, subjective creditworthiness assessments made by the credit officers of the interested bank cannot be used in prudential risk assessments.

[3] Of course, this also applies to credit-constrained borrowers. The aim here is that the public guarantee is used only to back additional credits to good borrowers.

Essentially, a small public guarantee reduces the cost imposed by prudential regulation too little.

By contrast, when the individual coverage rate is large the cost of prudential regulation becomes irrelevant for all borrowers—all have a lot of collateral and are safe borrowers. Thus, the bank only compares how much surplus it can extract from a borrower. Provided that the outside option of a borrower improves with her illiquid wealth, borrowers with little illiquid wealth are more profitable.

Last, it is now easy to see why the he total amount guaranteed by the public fund should be "small": once all formerly redlined good borrowers obtain credit, further additions only lead to substitution.

We then apply the results of our model to evaluate Chile's *Fondo de Garantía para Pequeños Empresarios* (Fogape). This fund follows the individual/retail model[4]. Nevertheless, credit evaluation is fully delegated to the bank; the fund neither screens nor approves the loan, nor has any direct relationship with the borrower. This delegation makes sense beacuse the banking sector is reasonably developed in Chile and some banks have a long experience lending to microfirms.

The rest of the paper proceeds as follows. In section 2 we make a brief review of arguments for and against public guarantees. In section 3 we present the model. Section 4 describes and analyzes Fogape. Section 5 concludes with some suggestions for improving Fogape and for further research.

2. A simple formal analysis of guarantee funds

The possible outcomes from a state-financed guarantee program are three. Assume that before the guarantee program banks lend only to good borrowers, but some are excluded because they lack collateral. The aim of a guarantee program is to finance good borrowers who are previously excluded from the credit market. But it can also have two undesirable effects. First, the public guarantee may be used to back loans that would have been made anyway, but backed with private guarantees. Second, it may prompt the bank to relax its standards and lend to bad borrowers—the bank engages in moral hazard, induced by state-financed guarantees. Is there any design to ensure that guarantees end up backing loans to only good but excluded borrowers? In what follows we will show that under a specific set of circumstances the answer is yes.

[4] As compared with the *portfolio model* (where the guarantor provides a guarantee that automatically covers allloans made by the lender within a certain criteria); and the *intermediary/wholesale* model, wherethe guarntor guarantees a loan or a line of credit from a local bank to a non-bank microfinance institution. See IADB (1998).

2.1. The model

Model description Assume that there is a risk-neutral bank and a continuum of risk-neutral borrowers of mass N, each with a one-period project that requires investment I. A small fraction λ of borrowers are "good" (g) and a large fraction $1-\lambda$ are "bad" (b). Banks know which borrowers are good and which are bad.

A project run by a good borrower succeeds with probability p_g and returns $R > (1+\rho)I$, where ρ is the bank's opportunity cost of funds. It fails with probability $1 - p_g$, in which case all is lost. Of course, $p_g R - (1+\rho)I > 0$. By contrast, a project run by a bad borrower succeeds with probability $p_b < p_g$, and loses money in expected value, that is $p_b R - (1+\rho)I < 0$. For simplicity, henceforth we assume that $\rho = 0$. Hence

$$p_g R - I > 0 > p_b R - I.$$

The regulator values collateral. If the bank lends I to a borrower that promises to repay $(1+r)I$ and posts collateral C, the bank must substract $\alpha(I-C)$ from current profits as provisions, with $\alpha \in (0,1)$. We will assume that

$$p_g R - (1+\alpha)I < 0.$$

That is, good borrowers that put up no collateral are too expensive to finance. We assume that borrowers' illiquid wealth is distributed according to the cdf $\mathcal{C}(w)$, with support $[0, W]$, with $W > I$.

Some useful expressions In what follows it will be useful to work with expressions for a borrower's participation constraint and for bank profits when making a loan. The participation constraint of a borrower is

$$p[R - (1+r)I] - (1-p)C \geq u(w), \tag{2.1}$$

where $u(w)$ is her outside option. We assume that $u_g(0) = 0$, $u_g' > 0$; that is, the outside option of the good borrower improves with her illiquid wealth, *ceteris paribus* (perhaps because a borrower with collateral can better play banks against one another). By contrast, $u_b(w) = 0$ for all $w \in [0, W]$. That is, the outside option of a bad borrower does not improve with her illiquid wealth.

On the other hand, the bank's payoff when making a loan is

$$\pi \equiv p(1+r)I + (1-p)C - I - \alpha(I - C). \tag{2.2}$$

We will assume that the bank has all the bargaining power, which is constrained only by the borrower's outside option $u(w)$. It follows that whenever the bank lends, r and C are such that

$$pR - p(1+r)I - (1-p)C = u(w). \tag{2.3}$$

Note that the borrower's participation constraint (2.3) implies that there is set of pairs (r, C) such that the constraint is met. A bank who asks for more collateral must charge less for the credit it gives.

It also follows from (2.3) that the bank's profit (2.2) can be rewritten as

$$\pi = pR - I - u(w) - \alpha(I - C). \tag{2.4}$$

Note that as long as (2.3) is met, the bank's profit does not depend on the interest rate charged. And were it not for prudential regulation, it would not depend on collateral C either. This is just a straightforward implication of the fact that the borrower's participation constraint always binds.

2.2. Behavior with no guarantees

Assume, to begin, that there is no state-run guarantee program. The first result shows that bad borrowers will never be financed.

Result 2.1. *Bad borrowers will not be financed.*

Proof. It follows directly from (2.4), noting that $p_b R - I < 0$. ■

The intuition behind this result is straightforward. Because $p_b R - I < 0$, bad borrowers do not generate enough surplus to pay for the opportunity cost of funds, and banks do not want to lend to them. Of course, banks would be willing to finance if a bad borrower puts up enough collateral. But bad borrowers won't be willing to do that, because in that case the project will not generate enough surplus to warrant it.

The next result shows that banks will finance good borrowers who put up enough collateral.

Result 2.2. *There exists good borrowers that will be financed. But, because of prudential regulation some good borrowers will be excluded.*

Proof. To prove the first part, note that good borrowers with enough illiquid wealth will be able to fully collateralize their debt. In that case banks earn

$$p_g R - I - u_g(w) > 0,$$

where the inequality follows from the assumption that $p_g R - I - u(W) > 0$. The second part follows directly from the assumption that $p_g R - (1+\alpha)I < 0$. Last, because $u_g' > 0$, it follows that there exists $w^* \in (0, I)$ such that the bank's profit equals exactly zero. ■

It is also interesting to note that banks will ask for as much collateral as possible. This may seem surprising, given that the expected surplus that can be extracted from each borrower is given by her outside option, and hence the bank does not care directly about the amount of collateral. Nevertheless, the amount of collateral affects the bank's profit through the provision requirements imposed by prudential regulation. The more collateral, the higher are profits.

Result 2.3. *Because of prudential regulation, banks will ask for as much collateral as possible.*

2.3. Unbounded public guarantees

We can now add publicly funded guarantees. To begin, we will assume that the bank can use as much guarantees as it likes—the public guarantee fund is unbounded. Let ηI be the maximum amount guaranteed by the public program, and G the public guarantee actually granted by the bank. Then the bank's profit equals

$$\begin{aligned} \pi &= [p(1+r)I + (1-p)C - I] + (1-p)G - \alpha(I - C - G) \\ &= [pR - I - u(w)] + (1-p)G - \alpha(I - G - C). \end{aligned}$$

It is clear that the bank's profit is increasing in the guarantee. The public guarantee adds to the borrower's collateral, thus increasing the bank's payoff in the default state and, moreover, reduces the cost of prudential regulation.

What is not so obvious, however, is that the bank can gain even more by substituting publicly-funded guarantees for the borrower's collateral, because it can extract more from the borrower by reducing C and increasing r. Of course, without a guarantee increasing r would be self-defeating: whatever is gained with a higher r in the good state, is lost in the bad state with less collateral. But with a publicly funded guarantee the bank can both reduce C *and* receive the money back in the bad state by using the guarantee. Hence

Result 2.4. *Let ηI be the maximum individual loan guarantee. Then the bank sets $G = \eta I$*

Thus Result 2.4 implies that the bank will substitute guarantees for the collateral of good borrowers. Moreover, if the public guarantee is such that all loans are fully guaranteed, now the bank will want to lend to bad borrowers, for now it earns

$$p_b R - I + (1 - p_b)I = p_b(R - I) > 0,$$

where the inequality follows from the fact that $R - I > 0$. And the bad firm will accept the loan: note that with a guarantee her equilibrium payoff is

$$p_b[R - (1 + r)I] = 0,$$

with $r > 0$ because $R - I > 0$. We can summarize this as follows:

Result 2.5. *Unlimited publicly-funded guarantees induce moral hazard on the part of the bank: substitution of guarantees for collateral and lending to bad borrowers.*

Note that the demand for guarantees is thus very large; so is the expected loss of the guarantee fund, viz.

$$\lambda N(1 - p_g)I + (1 - \lambda)N(1 - p_b)I. \tag{2.5}$$

Expession (2.5) just restates what we already know: because the potential number of borrowers in very large, and most of them are bad, an unbounded guarantee program creates very large losses. Moreover, such a program destroys wealth as well, in the amount

$$\lambda N \cdot \mathcal{C}(w^*)(p_g R - I) + (1 - \lambda)N(p_b R - I) < 0.$$

Of course, lending to the $\lambda N \cdot \mathcal{C}(w^*)$ good borrowers formerly excluded from the credit market creates wealth. But because $p_b R - I < 0$ and $(1 - \lambda)N$ is very large, the social loss wrought by the guarantee fund also is.

2.4. Bounded public guarantees

Can guarantees ever be useful? The trick would be to finance only good borrowers with wealth less than w^*. We will now deduce conditions under which guarantees end up financing *only* good borrowers who would otherwise be redlined. The key features of a successful guarantee program are the following. One is that the bank must be able to identify good borrowers using something other than collateral. Also, once a guarantee is in place, lending to good borrowers with little collateral must be more profitable for the bank than the alternatives. And while the per-borrower guarantee must be large, the guarantee fund must be bounded and "small" (below we will make precise what we mean by "small"). Last, if the rate of default on loans that receive the guarantee is greater than the rate of defaults of similar loans that do not, then the bank should be excluded from future allocations of the guarantee fund.

The first condition is straightforward. It is clear that publicly funded guarantees do not create any new information. As long as this is so, any successful program must rely on information that the bank can acquire *beyond the willingness of the borrower to put up collateral*. We now study the other three.

Small individual coverage rates To study the other three conditions, assume for the moment that its in the bank's interest to lend only to good borrowers. It is clear that the public guarantee increases the range of w's for which the bank does not lose money. For a given guarantee level η, the lower bound is now given by

$$(1-p_g)\eta I + \alpha I + [p_g R - u(w^*(\eta)) - (1+\alpha)I + \alpha w^*(\eta)] = 0, \tag{2.6}$$

which is clearly less than w^*. But, of course, if the guarantee fund is limited it does not follow that the bank will use the guarantee to lend to borrowers with illiquid wealth w in the interval $[w^*(\eta), w^*)$. Public guarantees will be allocated to those borrowers that increase the bank's profit the most. It is straightforward (if tedious) to show that if the public guarantee equals ηI, the increase in profits for a borrower with illiquid wealth w and individual coverage rate η, call it $\Delta_g(\eta, w)$, is

$$\begin{array}{ll} (1-p_g)\eta I, & w \geq I; \\ (1-p_g)\eta I + \alpha(I-w), & (1-\eta)I \leq w < I; \\ (1-p_g)\eta I + \alpha\eta I, & w^* \leq w < (1-\eta)I; \\ (1-p_g)\eta I + \alpha\eta I + [p_g R - u(w) - (1+\alpha)I + \alpha w], & w^*(\eta) \leq w < w^*. \end{array}$$

(see the Appendix for the full derivation, and Figure 1, where $\eta < \eta'$). It is useful to look at the sources of differences between borrowers. Note first that the term $(1-p_g)\eta I$ appears in all expressions. Essentially, the public guarantee is a subsidy paid in the bad state, which occurs with probability $1-p_g$. Because the borrower's outside option doesn't change with the public guarantee, banks get all the additional profits. The following result is apparent:

Result 2.6. *A public guarantee program increases bank's profits; are increasing in η.*

It is clear that this result follows from the assumption that the public guarantee does not increase the value of the firm's outside option. Yet it seems a fair description of what happens in practice. For one, public guarantees usually are not transferrable from one bank to another. For another, most small borrowers, which public guarantee programs target, tend to have relationships with only one bank.

For borrowers with illiquid wealth larger than I , $(1-p_g)\eta I$ is the only increase in profits wrought by the public guarantee. By contrast, for for borrowers with $w < I$, a second term appears, $\alpha(I-w)$ or $\alpha\eta I$ as the case may be. This term captures the saving in the costs imposed by prudential regulation. For borrowers who end up fully collateralized (those with illiquid wealth such that $(1-\eta)I \leq w < I$) the saving is proportional to the additional guarantee, $I - w$; for borrowers with smaller illiquid wealth, it is proportional to the full public guarantee, ηI. Clearly, the *marginal* saving is greater for those with less illiquid wealth, for they do not substitute public for private guarantees in the margin.

Last, consider the term $p_g R - u(w) - (1+\alpha)I + \alpha w$. This is the *loss* that the bank would incur lending to a good borrower with illiquid wealth such that $w^*(\eta) \leq w < w^*$. Without a public guarantee these borrowers would not get any credit. The subsidy $(1-p_g)\eta I + \alpha\eta I$, however, is enough to make them profitable. Nevertheless, the profit decreases as w does.

Now in practice the guarantee fund is limited, and it is apparent from Figure 1 that there is a pecking order among borrowers. To discuss it, and to keep the terminology clear, it is useful to define "small" and "large" individual coverage rates.

Definition 2.7. *Let η^* be defined by $(1-\eta^*)I \geq w^*$. An individual coverage rate is* small *if $\eta < \eta^*$, and* large *otherwise.*

Thus, Figure 1 depicts the case of small individual coverage rates. The following is apparent:

Result 2.8. *If the individual public guarantee is small, then public guarantees are first allocated to borrowers that would receive credit anyway.*

Result 2.8 indicates that the public guarantee fund may just substitute public for private guarantees, without granting additional credits. In fact, with a small individual coverage rate η, the only way of reaching good borrowers is to increase the size of the total fund. As is suggested by Figure 1, when all borrowers with illiquid wealth such that $w^* \leq w < (1-\eta)I$ are covered, then some of the guarantees will stimulate new credits, but substitution will increase as well.

Figure 1 also shows a nonobvious implication of the model: as η falls, and for a given size of the total fund (call it F), substitution of public for private guarantees should increase. This has an important implication, namely that when the guarantee fund is allocated to the bank that offers the lowest individual coverage rate η (as Fogape is), substitution is encouraged.

Result 2.9. *Ceteris paribus, the smaller the individual coverage rate, the larger the substitution of private guarantees, and the smaller the creation of new loans.*

2.4.1. Large individual coverage rates

We now examine the pecking order of borrowers when the individual coverage rate is large, i.e. $(1-\eta)I < w^*$. It is then straightforward to show that if the public guarantee equals ηI, $\Delta_g(\eta, w)$

is now

$$
\begin{array}{ll}
(1-p_g)\eta I, & w \geq I; \\
(1-p_g)\eta I + \alpha(I-w), & w^* \leq w < I; \\
(1-p_g)\eta I + \left[p_g R - u(w) - I\right], & (1-\eta)I \leq w < w^* \\
(1-p_g)\eta I + \alpha\eta I + \left[p_g R - u(w) - (1+\alpha)I + \alpha w\right], & w^*(\eta) \leq w < (1-\eta)I.
\end{array}
$$

(see the Appendix for the full derivation, and Figure 2, where $\eta < \eta'$). Now all borrowers with illiquid wealth greater than $(1-\eta)I$ are fully guaranteed. This includes some borrowers who would not get credit without the public guarantee.

The most important implication of this latter fact can be gleaned from Figure 2: now the pecking order is reversed, and the following result follows:

Result 2.10. *If the individual public guarantee is large, then they are first allocated to borrowers that otherwise do not receive credit.*

What is the economics behind this result? To appreciate it note that if borrower w^* receives guarantee ηI, it will be fully collateralized and generate

$$p_g R - u(w^*) - I + (1-p_g)\eta I$$

in additional profits for the bank.[5] In turn, when a formerly redlined good borrower becomes fully collateralized thanks to the guarantee, the incremental profit it generates for the bank, if it receives a public guarantee, is

$$p_g R - u(w) - I + (1-p_g)\eta I.$$

Because the value of the outside option $u(w)$ falls as illiquid wealth w falls, the bank gains most by using the guarantee with formerly redlined borrowers. In fact, when $\eta = 1$ and the public guarantee covers the entire loan, the best borrower is the one with no illiquid wealth! The policy conclusion is now straightforward:

Result 2.11. *A public guarantee should be generous individually, but the fund F should be limited, to prevent substitution.*

A generous individual coverage rate is good if the aim of the program is to help borrowers with little illiquid wealth. But, at the same time, it transfers rents and profits to the bank. This

[5] This follows from the fact that $p_g R - u(w^*) - I + (1-p_g)\eta I$ is the total profit generated by the borrower when it receives a large individual guarantee, and that the profit with no guarantee, $p_g R - u(w^*) - (1+\alpha)I + \alpha w^*$, by definition of w^* equals zero.

suggests that η should not be the bidding variable. Instead, the bidding variable should be a payment.

2.4.2. Bad borrowers

So far we have assumed that banks will only use the guarantee to lend to good borrowers. Is that assumption warranted?

It is straightforward to show that the incremental profit of lending to a bad borrower when the guarantee is ηI is

$$\Delta_b(\eta, w) = \begin{cases} (1-p_b)\eta I + (p_b R - I), & w \geq (1-\eta)I \\ (1-p_g)\eta I + (p_b R - I) - \alpha[(1-\eta)I - w] & w < (1-\eta) \end{cases}$$

Note that because $p_b R - I < 0$, with a small enough guarantee the bank loses money when lending to a bad borrower. Furthermore, as the lowest increase in profits when lending to a good borrower with a public guarantee is $(1-p_g)\eta I$, it follows that a sufficient condition for a bad borrower not to be preferred over a good one as a candidate for receiving the public guarantee is that

$$(1-p_b)\eta I + (p_b R - I) < (1-p_g)\eta I. \tag{2.7}$$

Will ever bad borrowers have priority over good ones when competing for a public guarantee? To study that, assume $\eta = 1$. Then condition (2.7) reduces to

$$p_b(R - I) < (1-p_g)I.$$

Of course, if p_b is small , then bad borrowers will not substitute for good borrowers. But if bad borrowers are not "too bad", then they will have priority over good ones. Nevertheless, one can show that there always will be a large enough individual coverage rate η such that the banks earns more by choosing a good borrower.

Proposition 2.12. *If η is large enough, then some formerly redlined good borrowers are more attractive than bad borrowers.*

Proof. By lending to a bad borrower the bank increases her profit by at most $p_b(1-\eta I) - (1-\eta)I$ (and by less if the bad borrower is not fully collateralized). By lending to a previously redlined good borrower, the bank increases her profit by $p_g(1-\eta I) - u(w) - (1-\eta)I$. Now, let $\eta = 1$, and consider a good borrower with $w = 0$. But then it is better to give the public guarantee to the good borrower, for $p_b(1-I) < p_g(1-I)$. ■

Proposition 2.12 is important, for it confirms that the most favorable circumstances for guarantees to go to good but (otherwise) redlined borrowers is for the individual coverage rate to be large.

3. An evaluation of Fogape

3.1. What is Fogape?

Fogape is a state fund aimed to partially guarantee credits issued mainly by commercial banks to small and microfirms. The fund is managed by Banco Estado, the stated-owned commercial bank, who auctions the guarantee among commercial banks and other financial institutions, and decides whether the guarantee is paid when the borrower defaults. Sixteen financial institutions participate in the program, and they are in charge of evaluating borrowers' creditworthiness and issuing the loan. Also, they partially assume the risk of default.

The fund had an initial capital of \$13 million, and by now it has climbed to \$50 million. Its revenues stem from returns on investments, recovered loans, and commissions paid by borrowers. Commissions are between 1 and 2% of the guarantee used. The commission varies by bank depending on previous performance. 86% of borrowers pay 1%.

The purpose of the program is that small entrepreneurs, who are unable to put up enough guarantees by themselves but qualify under a set of pre defined rules, obtain credit. Firms that qualify for the program are: (i) small agricultural firms with total annual sales less than \$730, 000, (ii) small non agricultural firms with total anual sales less than about \$750, 000, and (iii) exporters requiring working capital whose FOB exports were less than \$16.7 million in each of the two preceding years. There are no restrictions regarding the age of the firm or the economic sector it operates.

To be eligible, the credit should not exceed about \$270, 000 in the case of small firms, \$260, 000 in the case of exporters and \$1.3 million in the case of a a consortia of small firms. Also, the borrower's risk classification should not be higher than C1 which, under Chilean prudential regulation norms, means that the expected loss at the time the credit is issued should not exceed 3% (see the box which explains Chilean prudential regulation rules).

The program exists since 1980, but remained inactive until 1999. Since then between four and six auctions have been made each year. As shown in Table 1, between 2000 and 2005 the number of loans backed with a Fogape guarantee increased significantly. In 2000 Fogape guaranteed about 10, 000 credits, by 2004 they were more than 34, 000 operations. Over the whole period 2000− June 2005, 141, 260 loans have been backed, but only 84.640 borrowers have been benefited—many firms are granted a Fogape guarantee more than once[6]. The increase in the total amount guaranteed during the period was almost proportional to the number of credits, rising from \$140 million in 2000 to \$450 million in 2004, leaving almost constant the average amount of a loan which is about $\$13,500$.

Loans guaranteed by the program finance working capital as well as investment projects within a period of ten years. Nevertheless, the average duration of a guaranteed loan has been a little less than two years.

As shown in Table 2, since Fogape initiated its operation, most guarantees (88% of the total) have been used to back effective loans. Contingent operations, such as letters of credit or bank guarantee forms amount to less than 3% of the of the total loans guaranteed by Fogape and credit lines used for working capital only 7.5%.

3.2. The auction

To allocate Fogape among banks Banco Estado auctions guarantee rights among financial institutions four to six times a year. Three products are auctioned: long-run effective credits, which represent 50% of total resources on average; short-run effective credits representing on average 30%, the remaining 20% are contingent credits.

Fogape is a pay-as-bid, closed auction. Each bidder has to submit a bid indicating the amount of rights she wants to be awarded and the maximum coverage rate over the total lent (the bidding variable is equivalent to model's parameter η, but averaged over all borrowers). The bids are selected by the lowest coverage rate until the total amount auctioned equals total bids. There are reservation prices. For long-run effective loans and contingent credits the maximum coverage rate is 80%; for short run effective credits the maximum coverage is 70%. For loans greater than $\$90,000$ the maximum coverage rate is only 50%.

Over time, the average coverage rate returned by the auction has fallen. As Figure 3a the average coverage rate bid in the auction for long-term loans remained at about 80% until 2004, when BancoEstado began to bid below it. Since mid-2005 the rest of the banks followed BancoEstado and now the coverage rate is about 60%. Figure 3b, which shows the coverage rate bid in the auction for short-term loans Consequently, from 2000 until 2005, the actual coverage rate has been lower than 70% for only 18.33% of total loans; the rest got a coverage rate which has hovered between 70% and 80%.

Each bank can be awarded only limited amount and none more than two-thirds of the total rights auctioned each time. At the same time, banks that do not use at least 80% of the rights

[6] This number is significant. The total number of small and microfirms in 2003 was about $670,000$ (see Benavente et al., 2003, Table 1).

previously awarded can not participate in the next auction. Last, Banco Estado can temporally or permanently exclude a bank from participating if its default rate on previously guaranteed loans is too high.

3.3. Which firms are guaranteed by Fogape?

Fogape was created to promote small entrepreneurs' access to credit when they lack collateral or are unable to fulfill collateral requirements. Table 4 shows that it has been used mainly by microfirms[7]. Between 2000 and 2004 about 77% of the firms who used Fogape were the smallest among microfirms, and about 84% of users belonged to one of the three categories of microfirms. On the other hand, the number of small firms using Fogape has increased steadily since 2000. Nevertheless, they only represent a small percentage of total firms: in 2000 only 1% of the firms receiving Fogape were small, and by 2004 they represented only 3,5% of the total.

Despite that most firms that use Fogape are microfirms, their participation in the total amount lent is much lower and has being falling since 2000. As can be seen in Table 5, although 84% of the firms receiving guarantees in 2000 were microfirms, their share in total loans was only 40%. Moreover, this share has fallen steadily since then and reached 24% by 2004. Small firms, on the contrary, although being fewer in number, show a much larger and steadily rising share on total loans. In 2000 they received 41% of the total amount lent which was backed by Fogape and by 2004 their share had increased to 58%. This suggests that at an early stage of the program banks used Fogape more intensively to finance microfirms, but over time they have shifted it to small firms.

An interesting feature of the behavior of banks can be gleaned from Table 6, which shows the evolution of the number of new and old clients in the program. Although the number of clients that received Fogape has increased considerably, from 9,000 in 2000 to 24,000 by 2002, remaining steady since then, the proportion of new clients receiving Fogape has fallen steadily. While in 2001, 87% of the firms that received Fogape had not participated in the program previously, by 2004 only 60.7% were new participants. This suggests that banks tend to target the guarantee rights awarded on firms that already participate in the program and were good borrowers. As said before, while Fogape backed 141,260 loans between 2000 and June 2005, these guarantees favored only 84,640 firms.

3.4. How well does Fogape perform?

Our model indicates that a successful guarantee program finances firms that are "good", but are otherwise redlined for lack of collateral. By contrast, it neither finances bad firms nor substitutes public for private guarantees. In what follows we will see evidence indicating that Fogape seems to

[7] Firms' size is measured by annual sales. The classification is shown in Appendix 2.

have been quite successful in ensuring that only good borrowers receive loans, but that there seems to be substantial substitution. In addition, we argue that Fogape's auction design may stimulate substitution.

Default rates and sustainability The most obvious evidence that Fogape has not stimulated banks to be careless in lending is that the default rate of credits that receive a guarantee is only 1.05%, not much above than the one for the banking system as a whole, 1.01% during the second semester of 2005[8,9] This suggests that banks do screen firms on their ability to repay loans when using Fogape.

For this reason, the fund seems to be financially sustainable. Table 7 shows that the fund's revenues and expenditures between 2000 and 2005 are roughly equal. More interesting, so far commissions charged to banks have been roughly equal to guarantees paid.

Additionality and substitution There is also evidence that Fogape improves access to credit but, at the same time, several indications that substitution of public for private guarantees may be important.

Let's begin with the evidence about increased access to credit or additionality. A recent survey by Larraín and Quiroz (2006) examined in detail 700 borrowers who received a Fogape guarantee. When Fogape began in 2000, only a small group of banks bid for guarantee rights, so that few firms participated in the program. Later on, new banks began to bid and thus another group of firms received a Fogape guarantee. Assuming that firms that participated in the program only later on would have participated earlier had their bank bid in earlier Fogape auctions allowed the set up of a designed experiment. Two groups of firms were defined, "treated" and "control". Firms which participated from the beginning were defined as the treated group. Firms entering the program later on were used as the control group.

The exercise shows that, *ceteris paribus*, the average firm participating in Fogape increased their debt by around $18.000 and that this increase was statistically significant for loans issued in the Metropolitan Region of Santiago. By the same token, they find that the probability of getting a credit increased by 14 percentage points. Thus, firms that had access to Fogape earlier were more likely to get funding in the banking system. Considering that most firms that got Fogape later on were eligible by banks to be funded, this suggests that banks did not use Fogape only to substitute public for private guarantees.

[8] Note, moreover, that the rate for the banking system includes also large borrowers who tend to have lower default rates; it is likely that default rates of borrowers which are similar to those in Fogape are higher.

[9] Of course, one would like to compare the default rate of borrowers of the same size and within each bank that uses Fogape. Unfortunately, that information is not publicly available.

Statistical comparison of the control and the treated group also showed that firms that received Fogape increased their sales and profits after five years. On average sales increased by 32% and profits by 24%. This suggests that to some extend Fogape was allocated to firms with valuable business projects.

Additional evidence that Fogape increases access to credit comes from the responses by surveyed firms that did not have loans by 2000. Within this (admittedly small) group, around 90% declare that the reason was lack of collateral (see Table 8)

Nevertheless, a first suggestion that at least some substitution may be going on is that a substantial fraction of Fogape operations are with firms that already had received a one. As said before, while Fogape guaranteed 141.260 loans between 2000 and June 2005, only 84.640 firms have been benefited. As Larraín and Quiroz (2006) report, roughly one in two firms currently backed with a Fogape had already been backed before.

Larraín and Quiroz's survey also found that most firms that received a Fogape guarantee, did have access to credits in the financial system. As shown in Table 9, 82% of the firms that received Fogape in the Metropolitan Region of Santiago did have credits before the program started. Among the firms that received Fogape later, 87% did have credits before the program started. Percentages are slightly smaller in the rest of the country but there it is also true that the majority of firms had access to credit previously.

Of course, the fact that firms who received a Fogape guarantee had credits with banks does not rule out the possibility that they were credit constrained. The answer to the question whether they would be able to have the credit guaranteed by Fogape if they would not participate in the program suggests that Fogape did allow them to have extra credit. As shown in Table 10, in the Metropolitan Region of Santiago, 40% of the firms in the program at the early stage considered that they got the credit because they got a public guarantee. The same is true for 63% of the firms that received a credit guarantee with Fogape later on. At the same time, Table 10 shows that a substantial fraction of firms who received a public guarantee declared that they would have gotten the credit without Fogape.

4. Conclusions and recommendations

The apparent success of Fogape does not warrant a blank endorsement of state-financed guarantee programs. It should be stressed that its apparent success does not stem from any superior ability to overcome the standard problems created by asymmetric information in credit markets, nor because it provides advice to borrowers—in fact, Fogape neither evaluates borrowers, nor monitors the lending practices of banks. On the contrary, Fogape works because the incentive structure prompts banks to evaluate borrowers *as if* they were bearing the cost of making bad loans, by excluding them from future auctions if the default rate rises too much. Nevertheless, there are several indications that substitution of public for private guarantees may be important. To conclude we will make some suggestions to improve Fogape and, more generally, indicate which indicators should be used to evaluate the performance of a publicly-funded guarantee fund.

As we have seen in the analysis, there is an important distinction to be made between the individual coverage rate, which should be large, and the total amount guaranteed by the fund, which should be small. In addition, bank profits increase with the coverage rate. Thus, while the provisions that limit the share of individual banks in total rights make sense, it would probably be better to fix a high individual coverage rate and auction guarantee rights to the highest bidder. By doing so Fogape would prevent subtitution and, at the same time, extract rents from banks.

How should one evaluate a fund like Fogape? One indicator of the fund's success is a default rate which should similar to that for loans to similar firms but who are able to post private collateral. Second, it is not enough to show some additionality—one should measure the extent of susbstitution. Last, one should also evaluate the terms of finance that banks offer to guaranteed firms. As said before, it is unlikely that the borrower's outside option is improved by the guarantee and, as it stands, probably most of the rent accrues to the bank.

References

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Appendix

A. Full derivation of the bank's guarantee allocation decision

A.1. Guarantees and bank profits

A.1.1. Good borrowers

The profit obtained by the bank when lending to a good borrower with illiquid wealth w and no guarantee is

$$\pi_g(0,w) = \begin{cases} p_g R - u(w) - I, & w \geq I \\ p_g R - u(w) - (1+\alpha)I + \alpha w, & w^* \leq w < I \\ 0 & w < w^* \end{cases}$$

With a guarantee of a fraction η of the amount lent, it changes to

$$\pi_g(\eta,w) = \begin{cases} p_g R - u(w) - I + (1-p_g)\eta I, & w \geq (1-\eta)I \\ p_g R - u(w) - (1+\alpha)I + \alpha w + (1+\alpha-p_g)\eta I, & w^*(\eta) \leq w < (1-\eta)I \\ 0, & w < w^*(\eta) \end{cases}$$

Where $w^*(\eta)$ is defined such that

$$p_g R - u(w^*(\eta)) - (1+\alpha)I + \alpha w^*(\eta) + (1+\alpha-p_g)\eta I = 0.$$

The following lemma is useful for the characterization that follows.

Lemma A.1. *There exists $\widetilde{\eta} \in (0,1)$ such that $w^*(\widetilde{\eta}) = 0$.*

Proof. Let $\eta = 1$. Then

$$p_g R - (1+\alpha)I + (1+\alpha-p_g)\eta I$$

collapses to $p_g(R-I) > 0$. On the other hand, if $\eta = 0$, it collapses to $p_g R - (1+\alpha)I < 0$. Last, because $1+\alpha-p_g > 0$, the expression is monotonically increasing in η, which completes the proof. ■

It is useful to state the following results:

Result A.2. *Borrowers with wealth $w \geq (1-\eta)I$ are fully collateralized.*

Result A.3. *Guarantees increase the bank's profit for any borrower it lends to.*

Result A.4. *For borrowers such that $w \geq w^*$, the bank appropriates all the additional surplus created by the guarantee.*

This result follows directly from the fact that the guarantee does not improve the outside option of the borrower.

Result A.5. *For borrowers such that $w^*(\eta) \leq w \leq w^*$, the bank appropriates all new surplus created by lending above the outside option.*

It is now simple (if tedious) to compute the change in the profit of lending to a borrower with illiquid wealth w. This is always equal to

$$\Delta_g(\eta,w) \equiv \pi_g(\eta,w) - \pi_g(0,w).$$

Some simple algebra yields the following. If $(1-\eta)I \geq w^*$, then

$$\Delta_g(\eta,w) = \begin{cases} (1-p_g)\eta I, & w \geq I \\ (1-p_g)\eta I + \alpha(I-w), & (1-\eta)I \leq w < I \\ (1-p_g)\eta I + \alpha\eta I, & w^* \leq w < (1-\eta)I \\ (1-p_g)\eta I + \alpha\eta I + [p_g R - u(w) - (1+\alpha)I + \alpha w], & w^*(\eta) \leq w < w^* \end{cases}$$

Clearly, in the relevant ranges

$$(1-p_g)\eta I + \alpha\eta I > (1-p_g)\eta I + \alpha(I-w) > (1-p_g)\eta I.$$

Moreover, $(1-\alpha-p_g)\eta I + [p_g R - u(w) - (1+\alpha)I + \alpha w]$ is increasing in $[w^*(\eta), w^*)$ and, because the term in brackets is negative, it reaches its maximum at w^*, where

$$(1+\alpha-p_g)\eta I + [p_g R - u(w^*) - (1+\alpha)I + \alpha w^*] = (1+\alpha-p_g)\eta I$$

(see Figure 1).

Now, assume $(1-\eta)I < w^*$. Then

$$\Delta_g(\eta, w) = \begin{cases} (1-p_g)\eta I, & w \geq I; \\ (1-p_g)\eta I + \alpha(I-w), & w^* \leq w < I; \\ (1-p_g)\eta I + [p_g R - u(w) - I], & (1-\eta)I \leq w < w^* \\ (1-p_g)\eta I + \alpha\eta I + [p_g R - u(w) - (1+\alpha)I + \alpha w], & w^*(\eta) \leq w < (1-\eta)I. \end{cases}$$

Clearly, in the relevant ranges

$$(1-p_g)\eta I + \alpha\eta I > (1-p_g)\eta I + \alpha(I-w);$$

and, again, $(1-\alpha-p_g)\eta I + [p_g R - u(w) - (1+\alpha)I + \alpha w]$ is increasing in $[w^*(\eta), w^*)$ and

$$(1+\alpha-p_g)\eta I + [p_g R - u(w^*) - (1+\alpha)I + \alpha w^*] = (1-p_g)\eta I + \alpha(I-w^*)$$

(see Figure 2).

A.2. Which borrowers receive a public guarantee?

Now if the bank wins an amount F from Fogape, and each borrower receives a guarantee ηI, then there is a clear pecking order. As can be seen from the figures, the bank's profit increases more with some borrowers than with others, and public guarantees will be allocated first to the ones with the highest $\Delta(\eta, w)$.

Small individual coverage rates Consider first the case when $(1-\eta)I \geq w^*$, i.e. the guarantee is small. Then the most profitable borrowers are such that $w^* \leq w < (1-\eta)I$, i. e. borrowers that receive credit without Fogape. There are $\mathcal{C}[(1-\eta)I] - \mathcal{C}(w^*)$ of these borrowers and the following result follows:

Result A.6. *If $\eta I \times \{\mathcal{C}[(1-\eta)I] - \mathcal{C}(w^*)\} \leq F$, then no new borrowers are financed.*

It follows that when the per-borrower public guarantee is small, additional credits are granted only if the public guarantee fund is large enough. As the guarantee fund grows in size, some redlined borrowers begin to receive credit.

Nevertheless, as can be seen from Figure 1, these borrowers compete with those who have enough illiquid wealth to become fully collateralized once they receive a public guarantee. Call $\underline{w}(F)$ the borrower with lowest illiquid wealth who receives a public guarantee, and $\overline{w}(F)$ the borrower with highest illiquid wealth who receives a public guarantee. Then

$$\Delta(\eta, \underline{w}(F)) = \Delta(\eta, \overline{w}(F))$$

for $F > \eta I \times \{\mathcal{C}[(1-\eta)I] - \mathcal{C}(w^*)\}$. $F > \eta I \times [\mathcal{C}(I) - \mathcal{C}(w^*)]$

Result A.7. *If $F \geq \eta I \times \{\mathcal{C}[(1-\eta)I] - \mathcal{C}(w^*)\}$ then*

Large individual coverage rates Consider now large individual coverage rates. As can be seen from Figure 2, large guarantees change the pecking order of borrowers. Now the largest profit increases occur for borrowers who are redlined. What is the intuition? In essence, when the individual coverage rate is large, even some borrowers with illiquid wealth $w < w^*$ will end up fully collateralized if they receive the public guarantee. And among fully collateralized borrowers, those with *less* illiquid wealth will be the (marginally) most profitable for the bank, because their outside option is worse. The following result is now straightforward:

Result A.8. *If the individual coverage rate is large and the public guarantee fund small, then only redlined borrowers receive a public guarantee.*

B. Prudential regulation in Chile

Chilean prudential regulations force banks to assess the riskiness of each loan granted to firms and make provisions that cover expected defaultlosses. The evaluation is based on borrowers' capacity to honor their debt considering the economic sector where they operate, their experience in the business, their cash flow, liquidity, profitability and indebtedness and the quality of the collateral posted.

Loans granted to borrowers without any evident risk factor and when repayment would not be compromised in a downturn are classified in any of the three A categories, A1 being reserved only for those firms whose bonds are privately classified at least in an AA^- category. Banks classify a loan in category B if the borrower shows some risk but there are no signals that she won't pay back her loan. For each of these categories, the bank has to make a provision at a rate established by its own board of directors.

For riskier loans there are other six categories, and borrowers should be classified among them depending on bank's expected losses. There are pre determined provisions rates for each risk category indicating the percentage of the credit that has to be provisioned as shown in Table A2. For example, credits with expected losses up to 3% are classified in category C1 and the bank has to provision an amount equal to 2% of the loan. Even if a borrower shows no risk based on her financial indicators, if her loan is not standing, it has to be classified in any of the three C categories depending on the expected loss.

Besides these provisions, and in order to ensure the bank's ability to pay depositors in case of distress, banks are required to have an effective capital that not smaller than 8% of its assets weighted by risk. The total assets weighted by risk are calculated considering the riskiness of all its assets including loans, according to the percentages shown in Table A3. For example, a risk free loan is weighted 0% and does not constitute part of the total assets weighted by risk. On the contrary, a very risky loan is weighted 100% to calculate the minimum capital. Therefore, risky loans increase the minimum capital required to operate and are thus more expensive.

Table 1
Number of credits,
total and average loans guaranteed by Fogape
2000-2004

	Number of credits	Total loans (thousands $)	Average loan (thousands $)
2000	10,148	141,368	13.93
2001	19,310	193,457	10.02
2002	28,954	286,545	9.89
2003	30,883	379,564	12.29
2004	34,369	457,824	13.32

Source: Author’s elaboration with information provided by BancoEstado.

Table 2
Types of credits guaranteed by Fogape 2000-2005

	Participation (%)
Bank Guarantee Form	2.52
Letter of Credit	0.38
Loan	88.10
Factoring	1.50
Credit Line	7.50
Total	100

Source: Author's elaboration with information provided by BancoEstado.

Table 3
Distribution of actual coverage rates, 2000-2005

Coverage rate	%
Coverage rate lower than 70%	18.33
Coverage rate between 70% and 80%	81.67
Total	100

Source: Author's elaboration with information provided by Banco Estado.

Table 4
Distribution of firms using Fogape by size
2000-2004 (%)

Firm size	2000	2001	2002	2003	2004
Microfirm 1	77.74	77.76	76.34	78.19	76.37
Microfirm 2	3.62	4.11	4.46	5.47	6.23
Microfirm 3	2.25	2.23	2.46	2.85	3.24
Small firm 1	0.62	0.61	0.75	1.19	1.33
Small firm 2	0.29	0.61	0.72	0.88	1.18
Small firm 3	0.07	0.15	0.27	0.32	0.59
Small firm 4	0.08	0.13	0.26	0.36	0.39
Medium-size firm 1	0	0.06	0.11	0.17	0.24
Medium-size firm 2	0.01	0.04	0.01	0.01	0.01
Big firm 1	0	0	0.00	0.01	0
Big firm 2	0	0	0.01	0.01	0
No data on sales	15.33	14.30	14.62	10.55	10.42
Total	100	100	100	100	100

Source: Author's elaboration with information provided by Banco Estado

Table 5
Distribution of total loans guaranteed by firm size 2000-2004 (%)

Firm size	2000	2001	2002	2003	2004
Microfirm 1	6	4	4	3	3
Microfirm 2	10	6	6	5	5
Microfirm 3	24	18	17	16	16
Small firm 1	16	14	15	16	16
Small firm 2	14	17	17	19	19
Small firm 3	6	8	9	10	10
Small firm 4	5	12	13	14	13
Medium size firm 1	1	3	2	2	2
Medium size firm 2	0	0	0	0	0
Big firm1	0	0	0	0	0
Big firm 2	0	0	0	0	0
No data on sales	18	15	16	15	15

Source: Larraín and Quiroz (2006)

Table 6
Old and new clients with Fogape 2000-2004

	2000	%	2001	%	2002	%	2003	%	2004	%
Old clients	-		2,242	*13.0*	5,164	*21.3*	7,912	*33.3*	9,818	*39.3*
New clients	9,251	*100.0*	15,029	*87.0*	19,094	*78.7*	15,866	*66.7*	15,150	*60,7*
Total	9,251	*100.0*	17,271	*100.0*	24,258	*100*	23,778	*100*	24,968	*100*

Source: Larraín and Quiroz (2006)

Table 7
Fogape: Revenues and expenditures, 2000-2005
(in thousands of $)

	2000	2001	2002	2003	2004	2005
Revenues						
Commisions	**391.83**	**1,156.47**	**2,174.7**	**2,943.21**	**3,897.87**	**4,903.29**
Recovered loans	626.34	9.27	100.92	247.26	454.11	395.55
Return on investments	5,247.69	3,836.28	4,191.66	2,801.67	2,884.5	2,858.31
	0	0	0	0	0	0
Total	6,265.86	5,002.02	6,467.25	5,992.11	7,236.51	8,157.15
Expenditures						
Payment of guarantees	**387.63**	**1,125.66**	**2,589.45**	**3,389.88**	**2,958.03**	**4,174.14**
Provisions	**2,297.1**	**3,013.59**	**5,224.98**	**5,550.93**	**4,957.98**	**5,400**
Inflation adjustments	1,969.74	1,655.13	1,605.9	542.16	1,320.15	1,884.81
Guarantee requirements	465.18	1,350.81	3,816.51	4,904.61	4,999.41	6,887.82
Administrative charges	199.26	28.62	4.02	520.47	726.63	636.39
Auditing charges	2.1	16.2	10.86	9.99	13.41	12
Total	4,468.2	4,713.57	6,845.76	6,623.55	7,018.17	7,933.2
	0	0	0	0	0	0
Revenues minus expenditures	1,797.66	288.48	−378.51	−631.44	218.34	223.95
Average stock guaranteed	58,894.2	148,562.64	249,511.95	298,638.72	385,944.93	423,750

Source: BancoEstado.

Table 8
Why you did not have a loans by 2000?

	Metropolitan Region		Other Regions	
	With Fogape by 2000	With Fogape later on		With Fogape by 2000
Did not have collateral	90%	84%	100%	93%
Did not need a loan	0%	2%	0%	3%
Other reasons	10%	14%	0%	4%

Source: Larraín and Quiroz (2006)

Table 9
Did your firm have a loan by 2000?

	Metropolitan Region		Other Regions	
	With Fogape by 2000	With Fogape later on	With Fogape by 2000	With Fogape later on
Yes	82%	87%	78%	79%
No	18%	13%	22%	21%

Source: Larraín and Quiroz (2006)

Table 10
Would you be able to get credit without Fogape?

	Metropolitan Region		Other Regions	
	With Fogape by 2000	With Fogape later on	With Fogape by 2000	With Fogape later on
Yes	34%	29%	23%	35%
No	40%	63%	33%	44%
Did not get Fogape	25%	8%	44%	22%

Source: Larraín and Quiroz (2006)

Table A1
Classification of firms by annual sales

	Annual sales in $
Microfirm 1	Less than 6,000
Microfirm 2	From 200,1 to 18,000
Microfirm 3	From 18,001 to 72,000
Small firm 1	From 72,001 to 150,000
Small firm 2	From 150,001 to 300,000
Small firm 3	From 300,001 to 750,000
Medium size 1	From 750,001 to 1,500,000
Medium size 2	From 1,500,001 to 3,000,000
Big firm 1	From 3,000,001 to 6,000,000
Big firm 2	From 6,000,001 to 18,000,000
Big firm 3	From 18,000,001 to 30,000,000
Big firm 4	More than 30,000,000,

Table A2
Classification of credits under prudential regulation

Classification	Expected loss	Provision rate
C1	Up to 3%	2%
C2	More than 3% up to 19%	10%
C3	More than 19% up to 29%	25%
C4	More than 29% up to 49%	40%
D1	More than 49% up to 79%	65%
D2	More than 79%	90%

Table A3
Assets weights for minimum capital requirements

Risk category	Weight
1	0%
2	10%
3	20%
4	60%
5	100%

Figure 1
Guarantee allocation
with small individual coverage rates

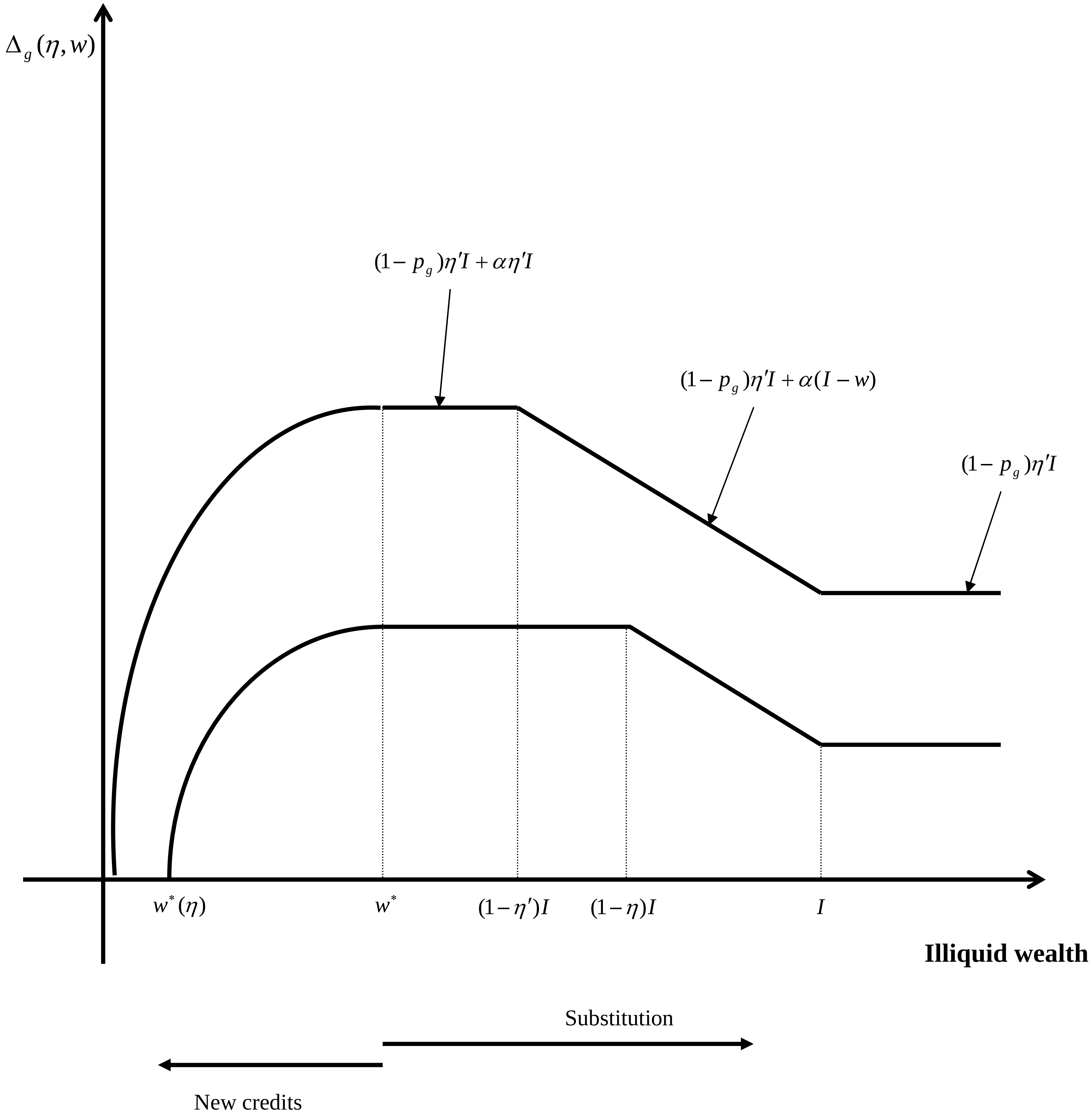

Figure 2
Guarantee allocation
with large individual coverage rates

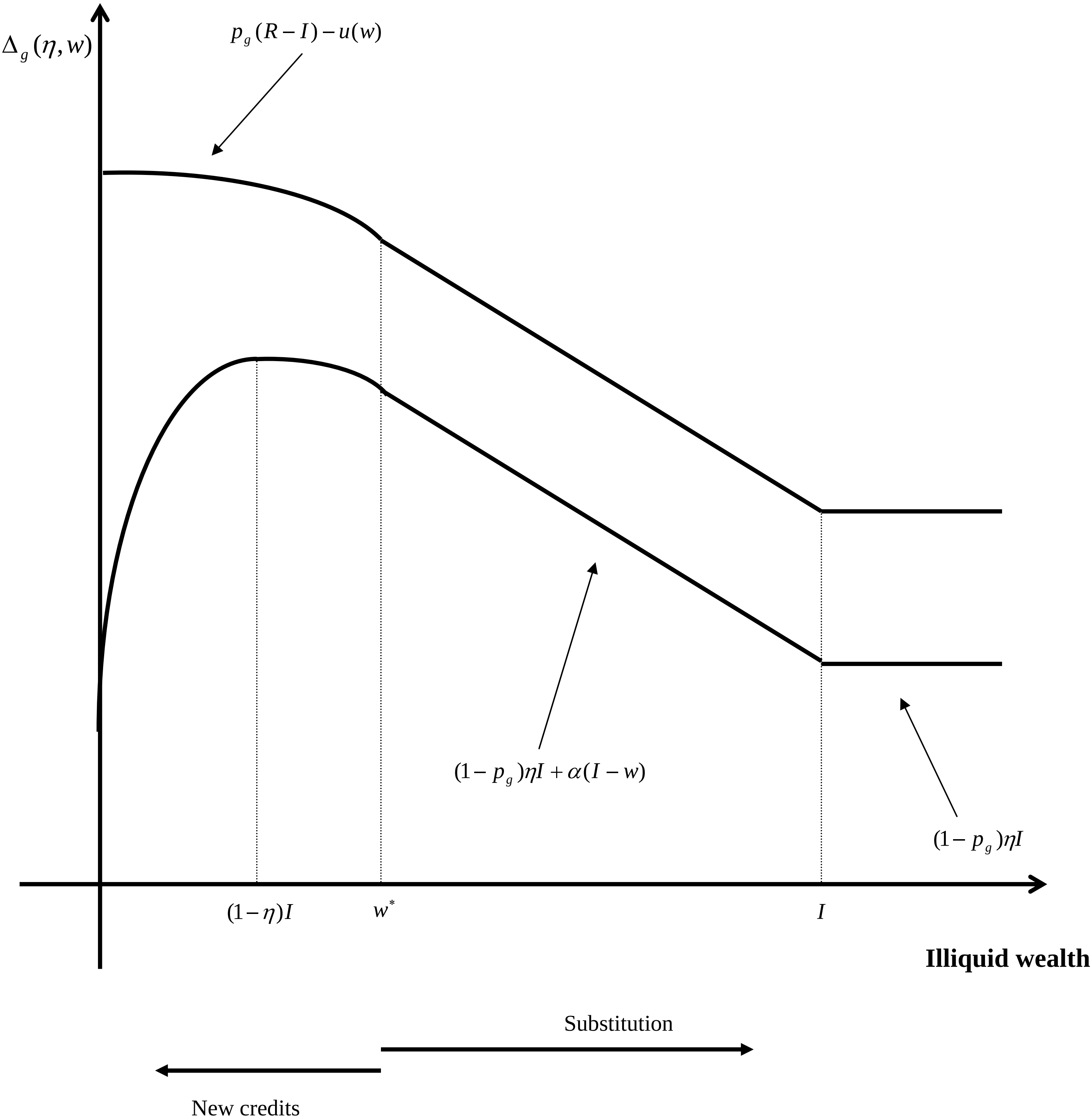

Figure 3a
Average coverage rate, long-term loans

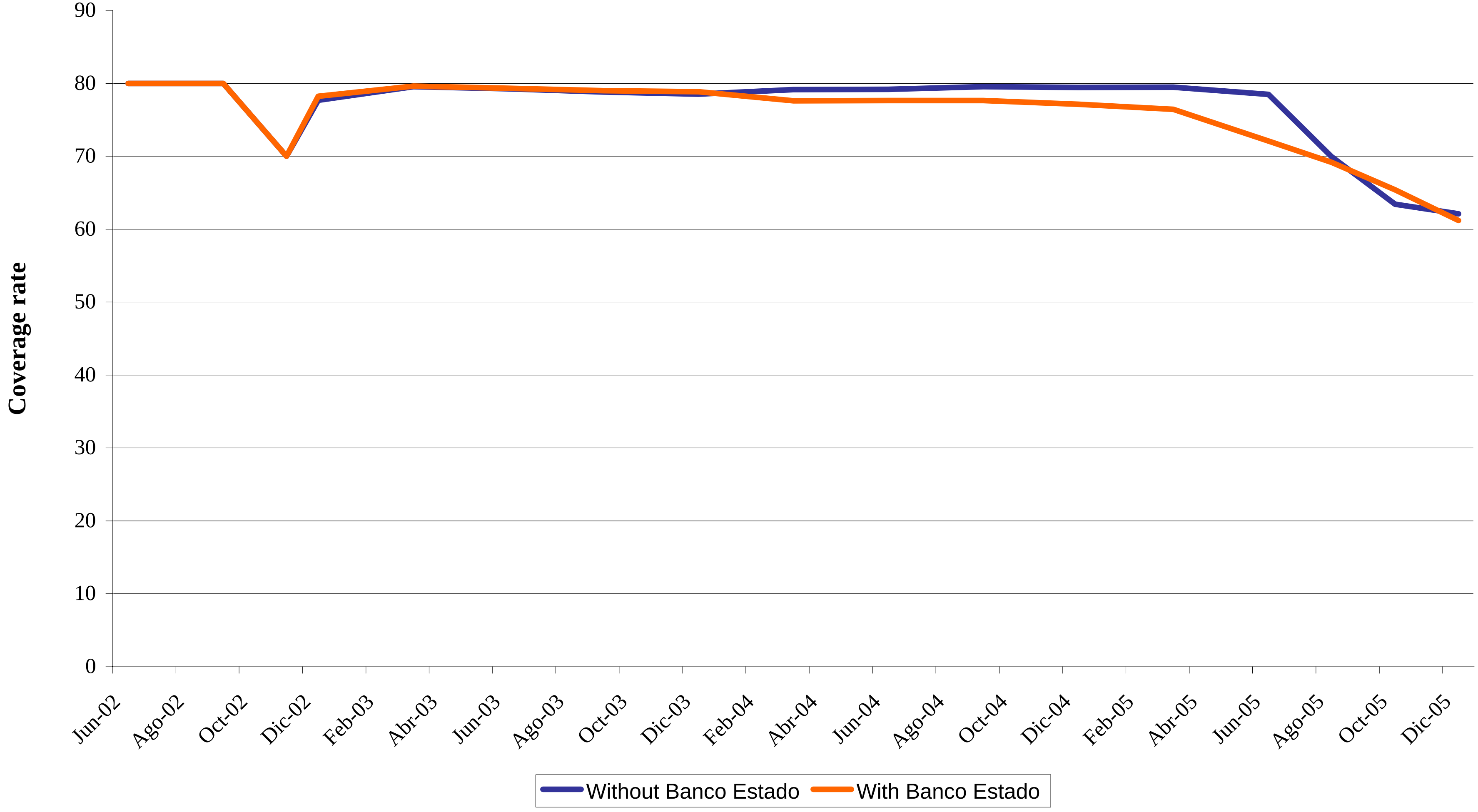

Figure 3b
Average coverage rate, short-term loans