

# Improving coffee farmer welfare with innovative credit solutions in developing countries



- In brief:**
- Most poor people in developing countries work in agriculture. Many sell to cooperatives and agro-processing enterprises. Improving these firms' access to credit has the potential to unlock demand and raise farmers' incomes.
  - Providing sustainable access to working capital loans in agricultural chains has proven difficult due to poor contract enforcement, volatility in world markets, and weak management.
  - Together with Root Capital, this project studies the nature of contractual defaults in the international coffee market; effects on credit provision to cooperatives and agro-processing enterprises; and effects on farmer welfare.
  - Overall, defaults by agricultural enterprises on working loans are relatively infrequent, however, roughly half of the observed defaults are strategic.
  - Approximately 35% of coffee enterprises are credit constrained and a further 39% are insurance constrained.
  - Therefore, to increase farmer welfare, contract enforcement and relationships along the supply chain need to be strengthened.
  - There should be efforts to improve credit to agricultural enterprises via innovative credit designs that improve the targeting of funds.

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## Policy motivation

Across the developing world, the rural poor — approximately 75% of the 2.6 billion people living on less than US\$2 a day — are marginalised from the formal economy. Most depend on agriculture as their primary source of income. These farmers often lack advantages such as fertiliser, good seed varieties, and training on agricultural methods. They cannot on their own export their crops to international buyers.

Agricultural cooperatives and agro-processing firms can provide farmers with these benefits, helping them to increase productivity and obtain better prices. Doing so, however, requires obtaining the necessary capital to operate and grow. Therefore, understanding the nature of credit constraints and how they can be alleviated is important.

## Context: Coffee export and poor access to loans

To investigate this, we study pre-financing agreements in the international coffee market, a context that offers conveniences for empirical design but is also of intrinsic interest. Coffee is one of the most valuable agricultural exports for several developing countries and the primary source of livelihood for approximately 25 million farmers worldwide.

We focus on working capital loans to coffee enterprises in Africa and Latin America, which allow them to purchase unprocessed coffee cherries from farmers prior to processing and sale to international coffee traders and roasters. These working capital loans bridge the gap between when the enterprise must pay farmers for their harvests and when the enterprise receives payment, months later, from its international buyers.

Traditionally, there have been two ways of providing these loans. Standard lenders in developing countries (e.g., agricultural banks) would typically use fixed assets of the enterprise as a form of collateral. As these are difficult to repossess and liquidate, or are insufficient given coverage ratios required by banks, commercial lenders struggle to serve the agricultural sector.<sup>1</sup>

Alternatively, large international buyers sometimes extend loans to agricultural enterprises, to be repaid by future shipments of coffee. However, these loans are susceptible to side-selling (i.e., selling to international buyers other than the one that provided the loan) and may result in unfavourable terms because the arrangement limits competition for the enterprises' produce. Finally, most international buyers are unable or unwilling to provide loans at the scale needed.

## An alternative lending model: Root Capital

Root Capital offers a third lending model, providing working capital loans to agricultural enterprises on the basis of the enterprises' export contracts with international buyers.<sup>2</sup> This lending model mitigates the problems described above because it 'bundles' the relationship that the enterprise has with the

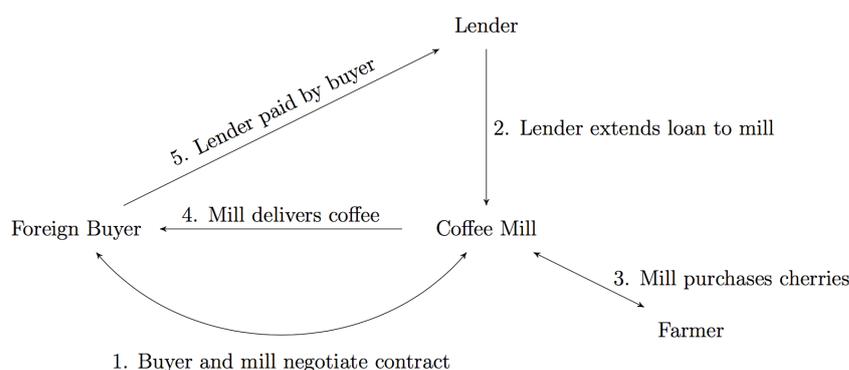
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<sup>1</sup> The coffee itself can also be used as collateral. While the non-perishable nature of coffee inventories makes it a better collateral relative to other chains, banks often lack the marketing expertise to realise the full commercial returns from repossessed inventories.

<sup>2</sup> Root Capital also provides long-term loans and other services to agricultural enterprises in various sectors. The study, however, exclusively focuses on working capital loans in the coffee sector.

buyer and the lender together, strengthening contractual enforcement.<sup>3</sup>

Typically, the enterprise and the buyer agree to a coffee sales contract prior to the delivery of the loan. The enterprise uses the loan to purchase cherries from farmers and delivers the coffee to the buyer. Upon delivery, the buyer repays Root Capital, which collects principal and interest and remits the remainder to the enterprise (Figure 1). Our study draws on confidential data from Root Capital on 967 loans extended to 272 coffee enterprises in 24 countries.



## Study overview: Strategic default strategies

**We are interested in three questions:**

1. What share of observed defaults are caused by opportunism and weak contract enforcement?
2. How do parties adjust contracts to the possibility of strategic defaults?
3. How large are the welfare losses and inefficiencies caused by strategic default?

To isolate strategic defaults, we test whether unanticipated *increases* in international coffee prices during the duration of the loan cause the enterprise to default. We focus on unanticipated price increases occurring *after* enterprises have already purchased coffee from farmers, thereby removing surges in input costs and availability as confounding factors.

When the international coffee price suddenly rises, enterprises that have locked in a fixed price with one buyer see an opportunity to make more money by selling at a higher price to a different buyer.<sup>4</sup> Our estimates suggest that *roughly half of the observed defaults are strategic*.

**In anticipation of strategic default, the buyer and lender can respond in two ways:**

- Keep a fixed price but become less willing to extend funds, resulting in the enterprise being *credit constrained*;

<sup>3</sup> Root Capital has relationships with coffee buyers as well and these further strengthen contract enforcement. This last aspect is harder to replicate for traditional lenders in developing countries. More broadly, the idea that interlinking transactions can overcome contractual imperfection has a long tradition in development economics. What is unusual about the Root Capital model is that the interlinkage is implemented between large firms located in multiple countries.

<sup>4</sup> As predicted, no relationship is found between unanticipated price increases and default when the enterprise and the buyer have a price-indexed contract.

- Rely on contracts indexed to the daily international coffee price, leaving the enterprise exposed to fluctuations in international prices, and therefore *insurance constrained*.

In both cases, the possibility of strategic default poses significant problems for lenders and buyers that try to provide working capital finance to the enterprises.

## Strategic default implications

Which option is the lesser of two evils? We show that it depends on the strength of the relationship between the enterprise and the buyer.

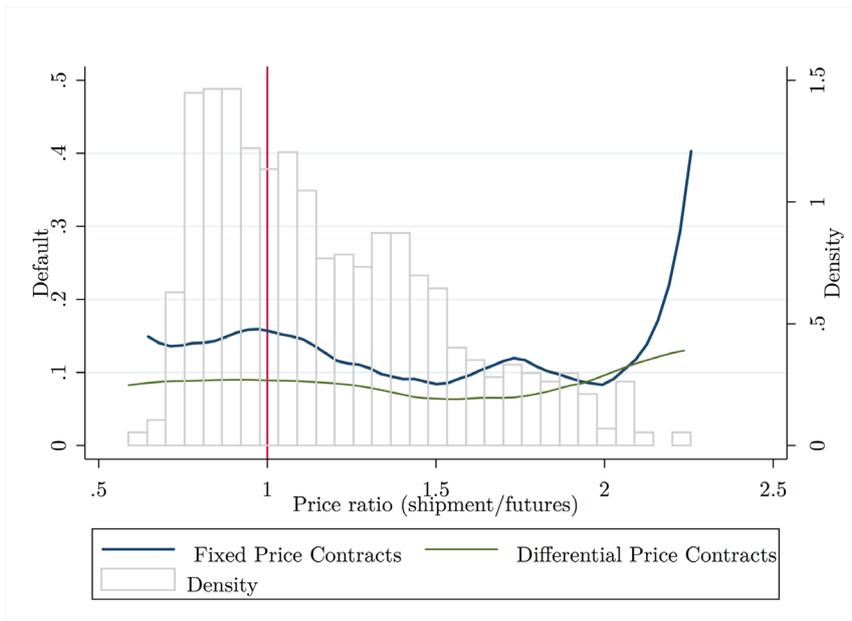
All else equal, **enterprises with stronger relationships tend to receive fixed price agreements from international buyers**, presumably because buyers trust them not to default. We find that *61% of enterprises in the sample receive fixed price agreements*. Of these, more than half (35% of the total sample) are credit constrained, despite Root Capital's loan. As a group, *enterprises with fixed-price contracts produce approximately 12% less than they would in the absence of contracting problems*.

**Enterprises with weaker relationships are more likely to have price-indexed contracts and thus to be insurance constrained**. As a group, *these enterprises produced approximately 18% less than they would have in the absence of contracting problems*. What would have enabled this group to produce more is not additional loans, but stronger relationships with international buyers that would have enabled them to obtain a fixed-price contract.

As a result, **the mere possibility of strategic default causes approximately 35% of coffee enterprises to be credit constrained and 39% to be insurance constrained**. This has direct effects: *Farmer welfare is reduced between 10% and 32%*. Ultimately, large market inefficiencies that have significant implications for farmer welfare remain hidden under a perceived low demand for additional credit and/or hedging tools.

## The value of buyer relationships

Unexpected changes in market conditions are associated with more default. When the international price of coffee unexpectedly increases by 10% over the duration of the contract, the probability of default increases by almost three percentage points in fixed-price contracts (e.g., from 1% to 4%) but not in price-indexed contracts (Figure 2).



Large price swings are needed to trigger defaults because Root Capital leverages the enterprise's relationship with the buyer. This requires that enterprises are punished with loss of future business if they default on the lender. *The cost of such punishment depends on how much the enterprise values the relationship with the buyer.*

**We find that the value of buyer relationships is substantial, amounting to, on average, 158% of the value of the contract.** Enterprises that have less valuable relationships with both the lender and the buyer drive strategic defaults on fixed price contracts.<sup>5</sup>

## Policy recommendations

This research provides the basis for a number of recommendations for policymakers:

- **Strengthen contract enforcement and relationships along the supply chain: From farmers, to processors, to (foreign) buyers.**

This goes beyond the generally accepted policy mandate to increase contract enforceability in developing countries (e.g., through schemes supporting collateral registration, or credit bureaus). For instance, inspired by the Root Capital model, policy makers can play a role in facilitating greater 'bundling' of relationships between buyers, enterprises, and lenders.

- **In contexts of poor contract enforceability, 'bundling' of relationships increases the penalty for defaulting because it is difficult or impossible to default on one counterparty without defaulting on the others.**

As a result, default rates decrease, and buyers and lenders respond to reduced default rates by being more willing to lend and provide protection from commodity price fluctuations to

<sup>5</sup> Enterprises that default are indeed punished by the buyer-lender, with the punishment increasing with the severity of default. For example, being nine months late on delivery and repayment or defaulting outright reduces the likelihood of receiving another contract in the future by almost 30%. If an enterprise is only three months late, the probability of receiving another loan is only 12% lower.

agricultural enterprises.

- **Making information on instances of default public to market participants promotes contract enforcement.**

In other cases, agricultural boards can intermediate the negotiation and implementation of company-label certifications, which also tend to strengthen relationships along the chain.<sup>6</sup>

- **Investments in improving communication and trust between agricultural enterprises and the farmers they source from are also likely to yield substantial returns.**

Such investments can reduce working capital requirements for enterprises and increase their ability to manage exposure to commodity price risk by reducing the level of uncertainty about the quantity and quality of production.<sup>7</sup> Regulations, like those implemented by the Coffee Institute of Costa Rica (Icafe), achieve precisely this goal. Advances in communication technologies and mobile payments offer the opportunity to implement similar schemes in countries with agri-business sectors not as developed as Costa Rica.

- **The successful implementation of interventions that strengthen contract enforcement and relationships along the supply chain hinges on the details of the agricultural product considered.**

Whether a product is perishable vs. storable, as well as the market structure (e.g., export vs. domestic oriented), are key factors to consider. In parallel, it is therefore important to find innovative solutions that can be applied to different contexts – particularly in light of the study findings that credit constraints at the enterprise level impose negative externalities on affiliated farmers.

- **Address credit constraints by providing incentives for lenders to extend credit to creditworthy (i.e., likely-to-repay) agricultural enterprises that otherwise would not receive a loan due to weak institutional environments.**

Efforts to expand credit supply often take the form of sweeping policies, such as reductions in interest rates, or the creation of sector-targeted credit facilities. This often sees much of the additional credit going to enterprises that were not credit constrained in the first place.

- **We recommend that policymakers explore new pay-for-performance schemes.**

In these schemes, lenders are provided a payment for each loan to an agricultural enterprise that meets certain conditions, such as:

1. The enterprise is creditworthy;

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<sup>6</sup> A successful example, which has resulted in increased loyalty along the whole chain, is provided by the implementation of the Nespresso Certification by the Federacion Nacional De Cafeteros in Colombia.

<sup>7</sup> Fixed-price contracts alone do not provide price insurance to enterprises and, in fact, can be problematic if rapidly rising prices in the world market are transmitted to input prices. More broadly, the implications of this study for price-risk management are nuanced: First, accessing hedging tools requires collateral, precisely what enterprises lack. Second, *demand* for hedging tools might be limited: A leveraged enterprise might keep the profits if prices increase but might not bear the full losses if prices decrease. Contracts with a fixed minimum with a floating ceiling are quite common in our sample (e.g., the fair trade contract) and are akin to price-indexed contracts from the point of view of our analysis.

2. the enterprises' operations benefit smallholder farmers and/or the environment;
  3. the enterprise would not otherwise receive a loan from another source; and
  4. the lender receiving the payment would not otherwise underwrite the loan, due to its low or negative expected profitability.
- **Independent third-party verification of these conditions is critical for the effectiveness of pay-for-performance schemes.**

A consortium including Root Capital (lender), Roots of Impact (unrelated to Root Capital, involving third-party programme design and verification), and Swiss Development Corporation (funder) is currently developing such as scheme, which if successful, could serve as a blueprint for larger-scale efforts.