Commodity Risk Management Group

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Outline

• Price Risk Management Problems
• Background of Project
• Activities
• Lessons Learned

Macroeconomic Problems of Commodity Price Volatility

• Systemic financial problem created when producers are unable to repay production credit
• Lower than expected tax income, needs for direct assistance, and deferred debt repayments impact budgetary ability to carry out other programs
• Inability to repay debts
• Inefficient allocation of resources
• Macroeconomic instability hampers growth and impedes poverty reduction

Microeconomic Problems of Commodity Price Volatility

• For the producer:
  – Inability to plan crops, allocate resources, obtain credit
  – Low income farmers adopt lower-yield, lower-risk production technologies and shift from cash crops to subsistence crops
• For cooperatives / exporters / traders
  – Inability to properly forecast cash flow, obtain credit, protect from financial losses
• For banks lending to agriculture
  – High levels of risk in lending / high levels of default due to client losses

Use of Interventions to Manage Price Volatility

• Market interventions
  – Domestic – marketing boards / stabilization funds
  – International commodity agreements / stabilization schemes
• Outcomes
  – have proven inefficient and costly
  – stabilization funds have faced significant financial problems
  – commodity agreements have been short-lived and discontinued
  – Overall financially unsustainable

Use of Markets to Manage Price Volatility

• Involve commercial trading practices in
  – Local forward cash markets
  – Local futures markets
  – International futures and options markets
• Will vary from one organization to the next
• Require cooperation among financial partners
• Require commitment of managers to learning about, analyzing, and managing risk on an ongoing basis
• Require investment (cash) to purchase price protection instruments when available (are not free)
Project Background

Project Goals
- Assess the feasibility for bridging the gap between commodity producers and the markets for commodity risk management instruments.
- Stimulate an enabling environment for the growth of a commercially viable commodity risk management business in developing countries.
- Empower organizations to analyze commodity risks and make informed decisions about the use of market instruments to manage their exposure.

International Task Force for Commodity Risk Management
- ITF established in 1999
- Membership: private sector, international organizations, donors, researchers, practitioners
- CRM group at WB is the implementation agency
- Initial feasibility work
- Implementation of test cases (pilots) starting in mid-2002

Commodity Risk Management Group within the World Bank
- in Agricultural & Rural Development Group
- Workprogram includes:
  - Macroeconomic issues of risk – price & weather / yield
  - Technical assistance (capacity-building) at level of developing country institutions
  - Integrating with Country Assistance Strategies, Poverty Reduction Strategies, IFC initiatives, other donor governments and initiatives

Activities & Lessons Learned

Phased Approach
- Analysis of commodity risks and identification of organizations, constraints, and training needs
- Select local organizations
  - Producer organizations
  - Banks and other financial institutions
  - Traders, processors, input suppliers, etc.
- Develop and implement a workplan
- Monitor and assess results
- Propose next steps
Type of Assistance

- CRM group provides technical assistance to local organizations to help them:
  - Identify and quantify commodity risks
  - Design a risk management strategy
  - Implement a risk management program and initiate transactions
- CRM provides inputs to providers that helps them with KYC

Activities to Date

- Feasibility assessment in various countries
- Initial work focused on coffee, but now starting with cotton and other commodities
- Initial work focused on producer organizations (e.g., cooperatives) and lenders
- Training mostly at managerial / leader level
- Implementation and transactions in:
  - Honduras, Nicaragua, Tanzania, Uganda (coffee)
  - First transaction in cotton (Uganda)
  - Weather-based index insurance transactions in India and Mexico

CRMG Work Areas
in the Commodity Value Chain

- Seeding
- Fertilizing
- Harvesting
- Treatment
- Warehousing
- Transport
- Processing
- Pre-Harvest Financing
- Pre-Export / Trade Financing
- Price Risk Management
- Collateral Management
- Policy Framework
- Production/Weather Risk Management
- Marketing/Export

Lessons Learned

- Significant needs for technical assistance
- Need for wider array of delivery models, particularly linked to financing
- Slow growth of business volumes
- Hedging is opportunistic and contingent on market conditions
- Hedging is an ongoing decision process
- Incentives (e.g., lowered interest rates from lenders) for repeat transactions

Market-Based Price Risk Management Solutions

Julie Dana, CRM Group

Agenda:

- Price Risk in the Cotton Market
- Introduction to Market-Based Instruments
- Delivery Channels
- Implementation Issues
Price Risk Management

Issues in Cotton

Cotton Price Volatility

• Cotton prices remain volatile
• Price risk management can impact short-term volatility, not long-term price decline
• Different exposures by:
  ✓ farmers—outright price
  ✓ ginners, traders—margins
  ✓ banks --- risk of borrowers making losses & defaulting

Cotton Farmers Dealing with Price Risks

• Fixed price systems (e.g. W. Africa)
• Forward selling to ginners: fixed price or minimum guaranteed price (non-delivery risk)
• Access to risk markets
  ✓ Directly (open accounts with brokers)
  ✓ Indirectly (ginners, input-suppliers, credit institutions)
• Key issues: need good producer organizations and training/education in risk management tools

Ginners Dealing with Price Risks

• Back-to-back sales
• Forward selling (depends on market conditions, non-delivery risk, what if prices rise?)
• Minimum guaranteed purchase prices (not as common)
• Use of over-the-counter (OTC) and exchange markets
• Key issues: reliable ginners, know-how and education in risk management tools

Cotton Price Volatility

Graphs courtesy of Nigel Scott, Rabobank

Physical

Price Risk Mgmt Instruments

– Rely on existing buyer/seller relationships in the physical trade of the product
– Can involve
  • forward sales contracts
  • designing pricing formulas that reduce mismatch between purchase and sales (back-to-back trading)
  • incorporating price protection into physical sales contract pricing formulas (for a cost)
  • specialty markets – i.e. organic markets where high premiums are available
Financial
Price Risk Management Instruments

- Involve creating new commercial relationships with providers in international markets
- Involve “derivative” products – price “derived from” underlying physical commodity
- Are contracts that are bought and sold
- Can involve
  - Futures
  - Options
  - Swaps
  - More complex structures

Price Risk Management Instruments

- Back to Back Trading
- Physical Contracts with formulas that include price protection
- Fixed Price Specialty Market Sales (at very high premiums)
- Exchange-traded and OTC
  - Futures, Swaps, Options

Cotton Market Pricing

- New York Board of Trade (NYBOT)
  - Reflects U.S. price / U.S. business
  - Good liquidity in exchange-traded futures & options
  - Over the counter business – options & swaps
  - Trades 2 years forward
- Cotlook A Index
  - Reflects world cotton prices
  - Acts as benchmark price for physical trade
  - Is not a regulated financial exchange
  - Some brokers make markets - swaps

Futures contracts

An agreement between two parties for deferred delivery of an asset or a commodity
- Transferable and standardized contracts that specify price, quantity, delivery date, delivery location
- help “lock in” price levels
- do not have an upfront cost
- require a credit line and daily margin account settlement
- not easily accessible to developing country producers without significant financial collateral

Futures Contract Example:

<table>
<thead>
<tr>
<th>Physical Market</th>
<th>July 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need sales contracts to secure financing but do not know future prices</td>
<td></td>
</tr>
<tr>
<td>Sell cotton forward for December at price based on $0.63/lb NYBOT</td>
<td></td>
</tr>
<tr>
<td>Worried about prices rising before volume is procured</td>
<td></td>
</tr>
</tbody>
</table>

------prices rise --------

<table>
<thead>
<tr>
<th>Financial Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1</td>
</tr>
<tr>
<td>Purchase NYBOT futures contract for December at $0.63/lb</td>
</tr>
</tbody>
</table>

------prices rise --------

Nov 1

| Procure/purchase cotton at price based on $0.67/lb NYBOT | |

Loss = ($0.04/lb) Gain = $0.04/lb

NET = $0.00

Limitation of Futures……
Margin Account Requirements

<table>
<thead>
<tr>
<th>Date</th>
<th>Price Level</th>
<th>Market Price</th>
<th>Difference</th>
<th>Volume in MT</th>
<th>Volume in LBS</th>
<th>Account Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-Apr</td>
<td>$0.6200</td>
<td>$0.6200</td>
<td>$0.0000</td>
<td>3,000</td>
<td>6,613,860</td>
<td>$0.00</td>
</tr>
<tr>
<td>24-Apr</td>
<td>$0.6200</td>
<td>$0.6000</td>
<td>($0.0200)</td>
<td>3,000</td>
<td>6,613,860</td>
<td>($132,277.20)</td>
</tr>
<tr>
<td>30-Apr</td>
<td>$0.6200</td>
<td>$0.5800</td>
<td>($0.0400)</td>
<td>3,000</td>
<td>6,613,860</td>
<td>($264,554.40)</td>
</tr>
<tr>
<td>5-May</td>
<td>$0.6200</td>
<td>$0.5600</td>
<td>($0.0600)</td>
<td>3,000</td>
<td>6,613,860</td>
<td>($396,831.60)</td>
</tr>
<tr>
<td>15-May</td>
<td>$0.6200</td>
<td>$0.6000</td>
<td>($0.0200)</td>
<td>3,000</td>
<td>6,613,860</td>
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Prices in $/LB

Example of Mark to Market of Futures Position

- Net = $0.00
- Loss = ($0.04/lb)
- Gain = $0.04/lb
- NET = $0.00
Swap Contracts

- Two parties exchange benefits/disadvantages of the market movement over time
- Buyer of a swap fixes a price that is agreeable, and pays / receives benefit from movements away from that price
- Advantages – can be a no-cost structure; can be structured on Cotlook A prices as well as NYBOT
- Disadvantages - counterparty risk

Swap Contract Example:

<table>
<thead>
<tr>
<th>Physical</th>
<th>Financial</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1</td>
<td>July 1</td>
</tr>
<tr>
<td>• Ginner is interested in committing to long term sales contract</td>
<td>• Purchase Cotlook A swap contract at $0.63/lb</td>
</tr>
<tr>
<td>• Fix long term sales agreement for entire season (thru Jan) at $0.63/lb</td>
<td></td>
</tr>
<tr>
<td>• Worried about fluctuating prices throughout season</td>
<td></td>
</tr>
</tbody>
</table>

-----prices rise -------
July - Nov 30
Procure/purchase cotton at fluctuating prices that averaged $0.67/lb NYBOT

July 1
Purchase Cotlook A swap contract at $0.63/lb

-----prices rise -------
July - Nov 30
Swap contract settles financially at average of $0.67 / lb NYBOT
Buyer receives difference $0.04/lb

Loss = ($0.04/lb)
Gain = $0.04/lb
NET = $0.00/LB

Options Contracts

The right to buy or sell a futures contract within a specific period of time at a specific price level (exercise price)

- Transferable and standardized contracts that specify price, quantity, delivery date, delivery location
- Help "lock in" price levels and provide opportunity to participate in positive price movements
- Have an upfront cost
- Do not require a credit line
- More easily accessible to developing country producers without financial collateral

Option Contracts

- Are two types:
  
  PUTS = The right, or "option", to SELL
  CALLS = The right, or "option", to BUY

*note – can buy or sell either
Options Contracts

Buying Option Contracts

CALLS = purchasing the "right" but not the obligation to BUY specific futures contract at a specified price within a specified time

-provides protection against prices moving up

Call Option Contract Example

Physical
July 1
• Need sales contracts to secure financing but do not know future prices
• Sell cotton forward for December at price based on $0.63/lb NYBOT
• Worried about prices rising before volume is procured

-----prices rise------
Nov 1
• Procure cotton at price based on $0.67/lb NYBOT

Financial
July 1
• Purchase NYBOT call option contract for December at $0.63/lb
• Cost of option contract is $0.02/lb

Premium = ($0.02/lb)

-----prices rise------
Nov 1
• Sell back or Exercise call option contract at $0.67/lb NYBOT
• Option pays out $0.04/lb

Loss = ($0.04/lb)

Gain = $0.04/lb

NET = ($0.02/lb)

Costs & Benefits to using Options to Manage Risk

Costs
• Provides price protection & peace of mind
• Can allow for more strategic sales decisions
• Can allow for greater access to credit (less risky financial situation)
• Requires detailed account opening procedures
• Hedging strategies can be flexible, customized, change over time

Benefits
• Does not solve all problems of commodity risk
• Contracts have a price – usually 3-8% of underlying contract value
• Requires significant managerial commitment, i.e. learning and ongoing administration
• Price protection is in global terms, $ basis (not local)

Limitations of Market-Based Instruments

• Will not impact long-term price trends
• Will not help manage exchange rate risk
  – If exchange rates change adversely, could affect the value of the instrument
• Basis risk issue - since the price protection is at the global price level, not local, must watch the correlation between the markets

Delivery Channels

• Smallholders may have trouble accessing financial commodity markets on their own
• Need delivery channel which can be:
  – Trader
  – Ginner
  – Merchant
  – Bank
Price Risk Mgmt Impact on Banks

• Borrowers’ business plan assumptions are directly affected by price – low prices create low margins, sometimes below operational viability
• Borrowers incur trading losses when not matching purchase and sales prices and trading losses lead to default
• Adverse price moves can create failure to achieve targeted volumes

High cost of finance erodes margins for all & impacts competitiveness vs. other countries
Negative experiences in lending to agriculture affects willingness to expand lending / supply competitively priced credit

Main Challenges for Market-Based Prick Risk Mgmt in Developing Countries

• Bridging the gap – what products/delivery channels will work?
• Counterparty risk
• Basis risk
• Foreign Exchange risk
• Market depth and liquidity
• Premium costs or margins
• Know how
• Institutional strength and resources (human and financial)

Main Benefits for Market-Based Prick Risk Mgmt in Developing Countries

• Better financial planning and management
• Improved access to financing
• Improved selling/purchasing strategies
• Ability to use wider array of business strategies to defend margins / maintain profitability
• Within the sector
  – better input/production decisions if less price uncertainty
  – less default/debt due to mismanagement of price volatility
  – overall supply chain relationships strengthened