Chronicle of a Default Foretold:
Asymmetric Debt Response to Predictable Shocks

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Abstract

This paper extends the analysis of sovereign debts to the incidence of foreseeable, permanent negative terms-of-trade shocks. Although the prospect of permanent drops in coffee prices was common knowledge in 1989, even the most coffee-dependent countries continued to accumulate debts as fast as non-coffee exporters. The waves of defaults ensued. However, private creditors did reduce exposure in a rational manner, while public creditors did not. Curiously, the latter engineered the “coffee crisis” in the first place, yet failed to respond to the predictable shocks of their own making. Policy implications include: (i) public creditors should not rely on in-house economic forecasts; (ii) foreign aid projects need the assessment of product-market impacts, to avoid unintended financial-market consequences; and (iii) intranational policy coordination is desirable for successful international cooperation.

1 Introduction

Toxic assets have always existed in international finance. Tomz and Wright (2007) count 169 defaults by 173 countries between 1820 and 2005, with 121 of them concentrated in

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the period since 1970. The models of defaultable debts suggest defaults are more likely in bad times than good (Eaton and Gersovitz 1981, Tomz and Wright 2008). A prime example of “bad times” is negative real exchange rate shocks, which eliminate the possibility of repayments when debtor countries rely on export revenues. Catao and Sutton (2002) find that the terms-of-trade volatility predicts sovereign default fairly well. For a typical developing country, the price movements of only three (or less) key export commodities can explain more than 50% of the changes in the terms of trade, according to Bidarkota and Crucini (2000). Coffee, crude oil, and sugar dominate the league table (Figure 1).

The importance of commodity prices in sovereign defaults has lead scholars to ask how much defaults can be explained by price shocks. Foley-Fisher (2008) calculates the “optimal” level of debt and default for each Highly Indebted Poor Country (HIPC) based on a dynamic, contract-theoretic model of small open economy. He finds that 35% of debt relief since 1980 can be rationalized by the terms-of-trade shocks of unpredictable nature (forecast error).

Analysts often assume that commodity prices are unpredictable. However, there are instances in which countries can foresee permanent declines in their terms of trade.

A case in point is coffee. The real price of coffee beans dropped by 73.7% between 1988 and 2001. Of this 73.7% decline, the structural econometric analysis in Igami (2009) attributes 53.7% points to the breakdown of the exporters’ cartel in July 1989. Growing exports from Vietnam and other supply/demand shocks explain further 10.5% points and 9.0% points, respectively.

An important twist is that the first two shocks (the cartel breakdown and the Vietnamese entry) were predictable back in 1989, from the perspectives of both debtors (coffee exporting countries) and creditors (governments of coffee importing countries, multilateral institutions, and commercial banks). Virtually all the exporting countries belonged to the cartel, so the breakdown of the agreement and its price implications were common knowledge. The lenders in the importing countries knew that, too, because it was the US that publicly withdrew support for the coffee cartel. Furthermore, the expansion of the Vietnamese production

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1In data, Tomz and Wright (2007) find that countries default in good times, too.

2The main reason was the end of the cold war. The US found less strategic utility in aiding the third world. From the beginning, the American support for the export quota agreement was based on geopolitical motives, exogenous to the economics of supply and demand. Hence we do not have to worry about endogeneity.
Note: 1985-1987 average.

Source: Bidarkota and Crucini (2000), Table 2, based on the World Bank’s Commodity Trade and Price Trends, Table 9.

Figure 1: Coffee Share in Exports

had been publicly funded by the World Bank and the US since the 1980s, with the goal of helping farmers substitute away from heroine poppy cultivation. Hence both the borrowers and lenders knew that the Vietnamese were coming and what that meant for the future coffee prices.

Curiously, both the creditors and debtors apparently failed to respond to these predictable permanent terms-of-trade shocks. The debt stocks continued to grow even after 1989, a lot of which were defaulted eventually. By examining these responses (or lack thereof) to the perspective of dropping coffee prices since 1989, I extend the analysis of sovereign debts to the incidence of foreseeable negative shocks.

problems regarding the rise and fall of the coffee cartel.

Currently I am investigating exactly how an importer like the US could help enforce the export quota agreement. One reasonable enforcement mechanism would be for the US to commit to rejecting extra imports from “cheating” producers.
A closer look at data reveals that, between 1989 and 1994, the private creditors correctly reduced their exposure to heavily coffee-dependent economies. Meanwhile, the “official” creditors (governments and multilateral institutions) kept on increasing their lending regardless of debtors’ coffee dependence. Thus, while the incentives of official creditors are ambiguous, the private creditors’ response is rational given the predictable, permanent shocks in the coffee market.

These asymmetric responses across private and official creditors can be explained in multiple ways. First, the official creditors might have had faith in the (wrongly) bullish coffee-price forecasts by the World Bank’s economists (Deaton 1999). Second, the official creditors may have lacked incentives to watch for defaults as much as private banks did. Since the objectives of public-sector entities are not always clear, yet another explanation is that the defaulted debts were meant as grants in disguise. Anecdotal evidence suggests that all these reasons could have been at play.

Furthermore, once we seriously consider the official lenders’ choice sets, the negative terms-of-trade shocks should not have been a surprise to them. The US and the World Bank were in a position to manipulate the coffee-exporters’ market power. Had they not supported Vietnam’s coffee production, or, had the US continued to support the exporters’ cartel, they would not have had to forego debts as much as they actually did. Thus, on the side of the rich countries’ governments and the multilateral financial institutions, there needs to be a better coordination of public policies across different areas: antitrust, international trade, sovereign finance, and development assistance.

In section 2, I explain the structural causes of the “coffee crisis.” In section 3, I sketch a simple model of defaultable debt. Section 4 shows the evolution of sovereign debts and the debtors’ characteristics. Section 5 analyzes the different reactions of private and official creditors. Section 6 concludes.

## 2 Predictable Permanent Shocks

In this section, I argue that the forces behind the drop in coffee prices were common knowledge to the sovereign debtors and creditors in 1989. The evidence surrounding the events
suggests that the permanent nature of the shocks (the cartel breakdown and the Vietnamese entry) were well understood back then.

Coffee beans are one of the most heavily traded commodities in the world, second only to crude oil. The market saw typical rise and fall of a cartel arrangement: the International Coffee Agreement. Contrary to popular beliefs, cartel and imperfect competition are prevalent among the producers of the major commodities traded in international exchanges. 3

The empirical approach of Igami (2009) is to estimate coffee bean demand, and then use the estimates jointly with a model of supply side, to recover the effectiveness of the quota agreement, i.e., the degree of competition/collusion among countries except Vietnam, the new entrant. We can measure the impact of the cartel breakdown in 1989 by comparing the actual price after 1989 to the counterfactual with a functioning cartel. To separately identify the impact of the Vietnamese beans on the coffee price, the study exploits the fact that Vietnam started and expanded coffee production unilaterally, on the back of the foreign aids from the World Bank and the US government.

The results suggest that, of the 73.7% drop in coffee prices between 1988 and 2001, the breakdown of the cartel in 1989 is responsible for 53.7% points (Figure 2). The expansion of production in Vietnam and other supply/demand shocks explain further 10.5% points and 9.0% points, respectively.

The impact of these events on coffee prices were predictable. Both debtors and creditors were part of the cartel agreement. There are numerous academic, journalistic, and industry publications evidencing the common-knowledge nature of the cartel breakdown and its effects. 4 Vietnam’s entry and expansion was also no secrets. The World Bank and the US government were financing the conversion of the arable areas in tropical highlands into coffee farms. The potential production capacity in Vietnam had been publicly assessed.

3For example, the OPEC controls a sizable proportion of the world’s crude oil exports. The diamond market saw successful exercise of monopoly power by De Beers. Slade and Thille (2006) analyze cartel arrangements in the base metals markets (aluminium, copper, lead, nickel, tin, and zinc). Gilbert (1996) presents historical assessment of the international commodity agreements on cocoa, coffee, rubber, sugar, and tin. Apparently, cartel and imperfect competition are rather the norm than exception in many commodity markets.

4See Gilbert (1996), Clark (2007), and various press releases of the International Coffee Organization.
Figure 2: Cartel Breakdown and Vietnamese Entry

The shocks were known to be permanent, too. A non-recurring event, the end of the cold war, changed the attitude of the US government toward the coffee cartel. Hence the demise of the export quota agreement was decisive rather than temporary. Likewise, nobody expected Vietnam to reverse its entry into coffee production. The country had suitable land and cheap labor. In addition, coffee beans are permanent crops. Coffee trees need approximately five years to reach full productive potential. It was therefore evident that Vietnam was going to expand capacity, with solid staying power and the backups from the World Bank and the US government.

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5In the price chart in Figure 2, you might have noticed a couple of spikes in the middle of the 1990s. Those are transient positive shocks caused by frosts in Brazil in 1994, which hampered the largest exporter’s production for a couple of years. Major frost hits Brazil every five years on average, but these are transitory shocks, not permanent ones that could reverse the detrimental effects of the cartel breakdown or the Vietnamese entry.
3 Model of Defaultable Debt

In this section, I present a model of coffee-exporting country to study the incentives of governments and foreign investors concerning predictable, permanent terms-of-trade shocks. The model is a simple version of the defaultable debt model, introduced by Eaton and Gersovitz (1981), and extended by Tomz and Wright (2008) and Foley-Fisher (2008) among others.

Consider a small open economy with coffee endowment and some investment opportunity that requires foreign capital. Every period the economy receives one pound of coffee beans from the trees in its tropical highland. The coffee is sold overseas at $p_t$, the international price of green beans. The coffee price $p_t > 0$ is an i.i.d. random variable with distribution $F(p)$.\textsuperscript{6} The cumulative distribution function $F(p)$ is common knowledge, but the realization of $p_t$ is not known to either the country or foreign investors at the beginning of period $t$, when debt financing takes place.\textsuperscript{7} The country spends the export revenue, $p_t$, to import consumption goods, $c_t$, and repay the debt, $b_t$.

For simplicity, the investment opportunity is taken as exogenous with a very high rate of return, $r > r^w$, where $r^w$ is the world interest rate. So the country always wants to borrow internationally. This national project for hybrid car development, say, is unrelated to the coffee sector.

The country’s representative agent is risk averse, with a strictly increasing and strictly concave utility function, $u(c)$. If debt is repaid, the country will receive an extra utility reward, $R$, which represents the benefits associated with honoring contracts (e.g., future access to foreign finance and trade).\textsuperscript{8}

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\textsuperscript{6}I abstract from the cartel and imperfect competition here. This does not necessarily mean perfect competition in the coffee market. The cartel’s decision, once reached, is binding and a small member does not have much say in it. A country is a “price-taker” in that sense. Hence, this is a model of Kenya, say, rather than the leading exporters like Brazil or Colombia.

\textsuperscript{7}The randomness of the price stems from demand shocks (e.g., the winter temperature in New York, Berlin, or Tokyo) and supply shocks (e.g., frosts or droughts in São Paulo, Paraná, and Minas Gerais).

\textsuperscript{8}For simplicity, the direct utility benefit of repayment is taken as exogenous. Alternatively, these payments can be modeled as the outcome of bargaining between creditors and debtors. See Yue (2006), Pitchford and Wright (2007), or Benjamin and Wright (2007). CAN WE ESTIMATE THIS $R$?
The country can obtain capital from a large group of risk-neutral foreign investors. Competition among members of this group ensures that they earn, on average, no more than the opportunity cost of their funds, $r^w$, the constant world interest rate.

Suppose defaultable debt is the only financial instrument available to the country. That is, the country can raise capital only by issuing an amount $b_t$ of zero-coupon bonds at price $q(b_t)$ per bond, where $q_t$ is a function of $b_t$. The capital the country receives from issuing these bonds, $k_t = b_tq(b_t)$, can be invested in the hybrid-car project. At the end of the period, the country chooses whether to honor the contract by paying the non-state-contingent amount $b_t$ to investors, or to default completely and retain all resources for itself.

If the country repays the debt, it consumes $c_t = p_t - b_t$ and also receives the utility rewards $R$. If, on the other hand, the country defaults, it spends the entire export revenue on consumption ($c_t = p_t$) but forgoes $R$. Hence, after observing the coffee price $p_t$, the country defaults if

$$u(p_t) > u(p_t - b_t) + R,$$

i.e., if the benefit of default exceeds that of repayment.

The bond price $q(b_t)$ reflects expectations about the likelihood of default denoted by:

$$\pi(b_t) = \Pr \{ p_t | u(p_t) > u(p_t - b_t) + R \}.$$  

(2)

The expected return from buying a zero-coupon bond is $1/q(b_t)$ times the probability of repayment, $1 - \pi(b_t)$. Investors will demand the expected return to be at least as high as $1 + r^w$:

$$\frac{1 - \pi(b_t)}{q(b_t)} \geq 1 + r^w.$$

Since we assume perfect competition among international bond investors, the above equation holds with equality. Solving it for $q(b_t)$, we get:

$$q(b_t) = \frac{1 - \pi(b_t)}{1 + r^w}.$$  

(3)

The country is effectively a monopolistic seller of bonds. It chooses the quantity $b_t$, taking into account $b_t$’s effect on the price of the bonds $q(b_t)$. If the country tries to borrow “too

\[9\text{CAN WE ANALYZE THEIR (IMPERFECT) COMPETITION?}\]
much,” for instance, the investors will correctly foresee a high probability of default. The bond price will be very low. As a result, the country will end up with only small proceeds from bond sales.

Defaults should be more likely to occur in bad times than in good ones. The country’s utility function, \( u(c_t) \), is strictly increasing and strictly concave. The promised debt repayment is non-negative, \( b_t \geq 0 \). It follows that, if a country defaults at some coffee price level, \( p_t^* \), it will default for all \( p_t < p_t^* \).

Now, suppose the 1989 breakdown of the export quota agreement (or the emergence of Vietnam as a major coffee exporter) lowers the likely range of prices, permanently. That is, the cartel breakdown shifts the coffee price distribution \( F(p) \) to a less favorable \( \tilde{F}(p) \). The new c.d.f. \( \tilde{F}(p) \) is less favorable to \( F(p) \) in the sense that the former is first-order stochastically dominated by the latter, i.e., \( \tilde{F}(p) \geq F(p) \ \forall p \).

The probability of default will be higher for a given \( b_t \), \( \tilde{\pi}(b_t) \geq \pi(b_t) \), because \( \tilde{F}(p^*) \geq F(p^*) \), where \( p^* \) is the threshold price level that makes the country indifferent between default and repayment. The price of zero-coupon bond \( q(b_t) \) is decreasing in the probability of default \( \pi(b_t) \) as in (3). So the amount of capital the country receives, \( k_t = b_t q(b_t) \), drops for a given \( b_t \).

Thus, the knowledge of the 1989 cartel breakdown (or the entry of Vietnam) is expected to reduce the sovereign debt financing.

4 Debts Accumulated, Anyway

In section 2, we saw that the permanent negative terms-of-trade shocks were foreseen in 1989. In section 3, we saw that such shocks should decrease the borrowing. In this section, I document the growth of debt stocks and the ensuing waves of debt relief.

Even though the creditors and the coffee-dependent debtors knew that the repayment

\[ u(p_t^*) = u(p_t^* - b_t) + R \]

for some \( b_t \). Since \( u'(c) > 0, u''(c) < 0 \), and \( b_t \geq 0 \), it holds that

\[ u(p_t) - u(p_t - b_t) > u(p_t^*) - u(p_t^* - b_t) \ \forall p_t \leq p_t^*. \]

Hence \( u(p_t) > u(p_t - b_t) + R \ \forall p_t \leq p_t^* \), and the country defaults. This result holds for all countries, regardless of the leader’s attitude toward risk.
capability of the latter was going to suffer from the decline in coffee prices, their debt stocks continued to grow at roughly the same pace as in non-coffee countries, at least until the middle of the 1990s (Figure 3: the left panel).

For ease of comparison, the sample is divided into four groups: (i) coffee exporters with coffee dependence (the share of coffee in overall export, 1985-1987 average) over 50%, (ii) over 10% to 50%, (iii) 10% or lower, and (iv) non coffee exporters. These groups contain 5, 16, 30, and 78 countries, respectively.

<table>
<thead>
<tr>
<th>Total Debt Stocks</th>
<th>Debt Forgiveness or Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1987-89 average = 100)</td>
<td>(billion US$)</td>
</tr>
<tr>
<td>Non-coffee (Sbn)</td>
<td>Coffee 6~10%</td>
</tr>
<tr>
<td>Coffee 1-10%</td>
<td>Coffee 11~30%</td>
</tr>
<tr>
<td>Coffee 11-50%</td>
<td>Coffee 31~50%</td>
</tr>
</tbody>
</table>
| Coffee 50+% | Coffee 50+%

Note: "Coffee %" refers to countries’ export dependence on coffee. See Table ?? in the Appendix for the identity of countries in coffee-dependent groups. The grouping in the right panel is finer for the purpose of graphical exposition.


Figure 3: Forgive Us Our Debts

Consequently, the waves of debt reductions followed in the latter half of the decade (Figure 4: the right panel). Between 1995 and 1999, a country in each of the four categories had $940 million, $660 million, $574 million, and $97 million worth of its debt cancelled, on average. Measured against the “initial” debt stocks level in 1989, the forgiveness amounts to 26.6%, 9.3%, 2.1%, and 1.0%, respectively.

There are some gaps in 1993 and 1994. I SHOULD CHECK WHETHER this is due to: (i) the reduced exposure of the private creditors; (ii) some defaults that already started to happen; or (iii) a few weird countries that are large enough to distort the group-average figures. More precise default data is desirable.
Thus, defaults were foretold but not avoided. Even heavily coffee-dependent countries kept on borrowing, right in the face of the predictable, permanent negative terms-of-trade shocks.

Now, let us look into the characteristics of the individual debtor countries. The aim is to find empirical regularities in debt increases and the types of countries, if any.

Highly coffee-dependent countries tend to be poorer (Figure 4: the left panel). In terms of regions, all of the ten countries above the $1,000 line are Latin American. The rest is dominated by Sub-Saharan Africa, except for Nicaragua, Papua New Guinea, Haiti, and Indonesia.

Surprisingly, there is absolutely no relationship between the coffee dependence and the changes in debt (Figure 4: the right panel). A simple regression reveals the following (lack of) relationship:

\[
\frac{\Delta \text{Debt}_{1989-94}}{\text{Debt}_{1989}} (\%) = -0.0017 \text{ (Coffee Dependence, %)} + 28.3423^{***},
\]

\(R^2 = 0.0000, \ N = 27,\)

where *** indicates significance at 1% level, with robust standard errors. The coefficient on the coffee dependence is not significantly different from zero. The fit is practically zero, too. Thus, in the five years following the demise of the coffee export cartel (1989-1994), the debts increased absolutely regardless of the debtors’ coffee-dependence.

This is surprising because both the debtors and creditors knew in 1989 that the export revenues from coffee were going to fade away. Heavily coffee-dependent countries would not be able to repay their debts. Yet debts accumulated, anyway.

5 Creditors’ Asymmetric Responses

In the previous section, we have seen that the debt stocks increased across the board between 1989 and 1994. The growth rate of debts did not vary with the debtors’ coffee-dependence.

\(^{12}\)There are no discernible relationship between the increase in debts and the initial debt level or GDP per capita, either. See Figure 6 in the Appendix.
In this section, I turn to the creditors’ side of the business. The total amount of debts increased invariably across the countries. But, once we divide the data into private and “official” creditors, signs of intelligence emerge (Figure 5).

Table 1 (column 2) reveals that private creditors reduced their exposure to the highly coffee-dependent nations. The negative relationship is statistically highly significant between debt growth and coffee-dependence. With $R^2$ of 0.25, the fit is reasonably high, too. Thus, private lenders did seem to react rationally to the perspective of declining coffee prices.

In contrast, the official creditors hardly bothered with debtors’ coffee-dependence (Table 1, column 3). The official creditors are curious agents, indeed. Not only did they ignore the predictable, permanent shocks, they themselves were the engineers of these “shocks” in the first place.

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13Official creditors include rich-country governments and intergovernmental organizations.

14I SHOULD MAKE SURE this is not due to defaults that already started to happen (somehow disproportionately against private lenders?). Better data desirable. Ask people for alternative explanations and run robustness checks.
We can learn at least three policy lessons from the coffee/debt crisis. First, economic forecasts should be conducted by independent parties, not by in-house economists with misguided incentives. The forecasters should have strong incentives to correctly predict the commodity prices. A sample of the forecasts from the futures-market participants would serve better, for example.

Second, sovereign financing decisions should be taken in light of the product-market analysis. In the similar spirit, the designers of development assistance projects should assess potential product-market impacts, to avoid unintended consequences. Independent industry specialists and industrial organization economists should be consulted.

Third, intra-national coordination seems vital for successful international cooperation. Whether the objective is economic, geopolitical, or humanitarian, the execution should be more efficient.

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Note: "Coffee Dependence" is the share of coffee in export, 1985-87 average.

Source: Bidarkota and Crucini (2000); World Bank.

Figure 5: Asymmetric Responses to Predictable Shocks

For instance, bullish forecasts for commodity prices justify increased lending to debtor countries, which helps get loan officers promoted: subprime loans.
Table 1: The Other Guy Blinked

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>depvar: $\frac{\Delta Debt_{1989-94}}{Debt_{1989}}$ (%)</td>
<td>Coef.</td>
<td>S.E.</td>
<td>Coef.</td>
</tr>
<tr>
<td>Coffee Dependence (%)</td>
<td>-.0017</td>
<td>.1826</td>
<td>-.6728***</td>
</tr>
<tr>
<td>constant</td>
<td>28.34***</td>
<td>8.022</td>
<td>4.125</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.0000</td>
<td>.2536</td>
<td>.0032</td>
</tr>
</tbody>
</table>

Note: *** indicates significance at 1% level, with robust standard errors. Public or Publicly Guaranteed debts. Coffee Dependence is the 1985–87 average share of coffee in country’s export.

6 Conclusion

The findings of this study are as follows. When shocks are predictable, private lenders respond in a logically consistent manner, while public lenders do not. One possible reason is bad forecast. The incentive structure might be responsible, too. Or maybe the boundary is sometimes blurred between loans and grants.

The study calls for better coordination among different divisions of public policies. In other words, when you give to the poor, do let your left hand know what your right hand is doing.

Appendix A: Debtor Characteristics
Table 2: Highly Coffee-Dependent Exporters

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Uganda</td>
<td>96</td>
<td>3.66</td>
<td>2.196</td>
<td>54.7</td>
<td>16.3</td>
<td>168</td>
</tr>
<tr>
<td>Burundi</td>
<td>84</td>
<td>0.72</td>
<td>0.889</td>
<td>26.8</td>
<td>15.8</td>
<td>151</td>
</tr>
<tr>
<td>Rwanda</td>
<td>69</td>
<td>0.91</td>
<td>0.619</td>
<td>53.8</td>
<td>0.2</td>
<td>235</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>67</td>
<td>2.03</td>
<td>7.842</td>
<td>28.3</td>
<td>59.6</td>
<td>131</td>
</tr>
<tr>
<td>El Salvador</td>
<td>64</td>
<td>2.92</td>
<td>2.080</td>
<td>0.8</td>
<td>24.4</td>
<td>1,589</td>
</tr>
<tr>
<td>Colombia</td>
<td>47</td>
<td>14.93</td>
<td>16.886</td>
<td>29.9</td>
<td>0.7</td>
<td>1,802</td>
</tr>
<tr>
<td>Tanzania</td>
<td>44</td>
<td>1.04</td>
<td>5.853</td>
<td>23.8</td>
<td>19.8</td>
<td>257</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>41</td>
<td>0.85</td>
<td>9.685</td>
<td>23.9</td>
<td>56.2</td>
<td>697</td>
</tr>
<tr>
<td>Guatemala</td>
<td>39</td>
<td>3.75</td>
<td>2.603</td>
<td>19.2</td>
<td>0.2</td>
<td>1,436</td>
</tr>
<tr>
<td>Madagascar</td>
<td>37</td>
<td>1.18</td>
<td>3.418</td>
<td>19.3</td>
<td>13.5</td>
<td>271</td>
</tr>
<tr>
<td>Kenya</td>
<td>32</td>
<td>2.23</td>
<td>5.889</td>
<td>21.0</td>
<td>3.5</td>
<td>445</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>31</td>
<td>3.09</td>
<td>4.589</td>
<td>-14.8</td>
<td>15.0</td>
<td>3,074</td>
</tr>
<tr>
<td>Honduras</td>
<td>28</td>
<td>1.93</td>
<td>3.386</td>
<td>38.8</td>
<td>19.7</td>
<td>1,080</td>
</tr>
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<td>Central African Rep.</td>
<td>26</td>
<td>0.36</td>
<td>0.692</td>
<td>27.8</td>
<td>30.9</td>
<td>284</td>
</tr>
<tr>
<td>Cote d’Ivoire</td>
<td>19</td>
<td>4.28</td>
<td>14.821</td>
<td>17.4</td>
<td>38.5</td>
<td>681</td>
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<tr>
<td>Haiti</td>
<td>16</td>
<td>0.32</td>
<td>0.836</td>
<td>-12.1</td>
<td>22.4</td>
<td>631</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>16</td>
<td>0.15</td>
<td>1.078</td>
<td>41.9</td>
<td>26.0</td>
<td>246</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>15</td>
<td>1.47</td>
<td>2.316</td>
<td>20.6</td>
<td>0.4</td>
<td>604</td>
</tr>
<tr>
<td>Congo, Dem. Rep.</td>
<td>14</td>
<td>2.20</td>
<td>9.251</td>
<td>33.2</td>
<td>0.1</td>
<td>224</td>
</tr>
<tr>
<td>Cameroon</td>
<td>13</td>
<td>2.04</td>
<td>5.241</td>
<td>74.2</td>
<td>13.5</td>
<td>788</td>
</tr>
<tr>
<td>Dominican Rep.</td>
<td>13</td>
<td>0.69</td>
<td>4.039</td>
<td>5.9</td>
<td>5.9</td>
<td>1,638</td>
</tr>
<tr>
<td>Ecuador</td>
<td>10</td>
<td>2.36</td>
<td>11.316</td>
<td>32.3</td>
<td>12.6</td>
<td>1,293</td>
</tr>
<tr>
<td>Togo</td>
<td>10</td>
<td>0.38</td>
<td>1.176</td>
<td>23.8</td>
<td>14.7</td>
<td>279</td>
</tr>
<tr>
<td>Brazil</td>
<td>9</td>
<td>25.40</td>
<td>114.356</td>
<td>33.3</td>
<td>6.2</td>
<td>3,586</td>
</tr>
<tr>
<td>Panama</td>
<td>6</td>
<td>0.17</td>
<td>6.219</td>
<td>10.9</td>
<td>16.6</td>
<td>2,777</td>
</tr>
</tbody>
</table>

Note: “Coffee Dependence” is the 1985-1987 average share of coffee in export. The “Market Share” is the country’s share in the world coffee bean export, 1987-1989 average.

Source: Bidarkota and Crucini (2000); International Coffee Organization; World Bank, Global Development Finance Database and World Development Indicators; Jubilee Research (2007).
As much as 41.9% of the world’s developing countries are coffee exporters. In particular, countries with coffee dependence higher than 10% account for 16.3% of the developing countries. The majority of the coffee exporters are HIPCs, and vice versa.

Table 3: Coffee and HIPCs

<table>
<thead>
<tr>
<th>Coffee Dependence (%)</th>
<th>Non-Coffee</th>
<th>Coffee Exporters</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1~5</td>
<td>~10</td>
</tr>
<tr>
<td>Number of Countries:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIPC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Forgiven</td>
<td>12</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>- Not Forgiven</td>
<td>9</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Non-HIPC</td>
<td>54*</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>75*</td>
<td>29</td>
<td>4</td>
</tr>
</tbody>
</table>

Note: The number of countries marked by (*) are based on the 129 countries recorded in the World Bank’s Global Development Finance Database. It does not necessarily reflect all the commonly recognized countries in the world. "Forgiven" indicates countries that had reached debt forgiveness "decision point" by 2007, according to Jubilee Research (2007). Note: "Coffee Dependence" is the share of coffee in export, 1985-87 average.

There are no discernible relationships between the increase in debts and the initial debt level or GDP per capita.

Source: World Bank, Global Development Finance Database and World Development Indicators.

Figure 6: Debt Growth, Initial Stocks, and GDP
Appendix B: Coffee and Macroeconomy

Let us briefly review the macroeconomic consequences of the coffee crisis. Figure 7 summarizes the outputs (GNP) and net export ratio (net export / GNP) in all of the 129 developing countries covered in the World Bank’s Global Development Finance Database. For the ease of comparison, the sample is divided into four groups: (i) coffee exporters with coffee dependence (the share of coffee in overall export, 1985-1987 average) over 50%, (ii) over 10% to 50%, (iii) 10% or lower, and (iv) non-coffee exporters. These groups contain 5, 16, 30, and 78 countries, respectively.

Figure 7: Coffee as Macroeconomy

Between 1988 and 1992, the real price of coffee beans dropped by 73.7%. The impact can be seen in the diverging output and net export performances across different groups of countries. The most coffee-dependent group saw its 1994 GNP level 15.9% lower than its 1987-1989 average, while the non-coffee group experienced 24.4% growth in the same measure. Of course, we cannot make a concrete causal statement based solely on these numbers. But the overall performance gap is evident.


Figure 7: Coffee as Macroeconomy

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For consequences at the rural household level, see Varangis, Siegel, Giovannucci, and Lewin (2003).

Group (i) consists of countries like Rwanda and Burundi. Brazil and India are in group (iii), and China is in group (iv). We should at least compare “comparable” countries for any serious causal inferences.
The governments’ fiscal responses probably merit further investigation. As demonstrated by Tornell and Lane (1999), their relationship with the countries’ political-economy characteristics could be interesting, too.

References


