The Long Run Impact of the Ending of Coffee Control

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1. Introduction

The economic clauses of the Fourth International Coffee Agreement were suspended on 4th July 1989 (coffee's Independence Day) two months prior to the statutory end of the agreement itself. I have discussed the reasons for termination of control in Gilbert (1996) and have suggested a game theoretic model which explains termination in Gilbert (2004a). Rather than repeat those discussions, I refer the interested reader to those source. The purpose of this paper is different: sixteen years on, it is both opportune and possible to assess the long term effects of the ending of coffee controls,

I consider two specific sets of issues.

a) How have coffee prices been affected by the end of coffee controls. Under this heading, I consider the level of coffee prices, its trend, price volatility and the relative prices of the different types of coffee (naturals, milds and robustas).
b) What have been the effects of the ending of controls on the distribution of coffee production across types of coffee (arabica and robusta) and across different coffee producing countries.

These two sets of issues are related, production depends on the price and other incentives to produce, and prices depend on the availability of coffee in which production is the major variable.

The structure of the paper is as follows. Section 2 considers the level, tend and volatility of real coffee prices before and after the control period. Section 3 is devoted to differentials between the different coffee growths. Section 4 considers the trend in coffee production before and after the control period, the breakdown between production of different types of coffee and the location of coffee production across countries. Section 5 looks at concentration in coffee production and its implications for any future supply management exercise. Section 6 looks at the links between coffee prices and real exchange rates. Section 7 concludes.

2. Real Coffee Prices

There is general agreement that the international coffee agreements supported coffee prices above market levels, and indeed, so far as many coffee exporting countries were concerned, the

major purpose of the agreements was to do exactly this. It is therefore hardly surprising that the ending of controls should result in lower prices. In fact, prices, already weak in the final two control years, fell precipitously over the three initial three years of independence (1990-92). The International Coffee Organization (ICO) Indicator Price averaged 115.9 c/lb in May 1989, just before the end of coffee controls. By May 1990, it was 73.3 c/lb and by May 1992 it had fallen to 50.0 c/lb, just 43% of its pre-independence level.

Prices recovered from the final months of 1992, partly under the influence of the ACPC retention scheme (although this may represent more the impact of the announcement of retention than retention itself),[1] partly through hedge fund buying of commodity futures, seen as an under-valued asset class, and subsequently through the impact of the double Brazilian frosts in July 1994.

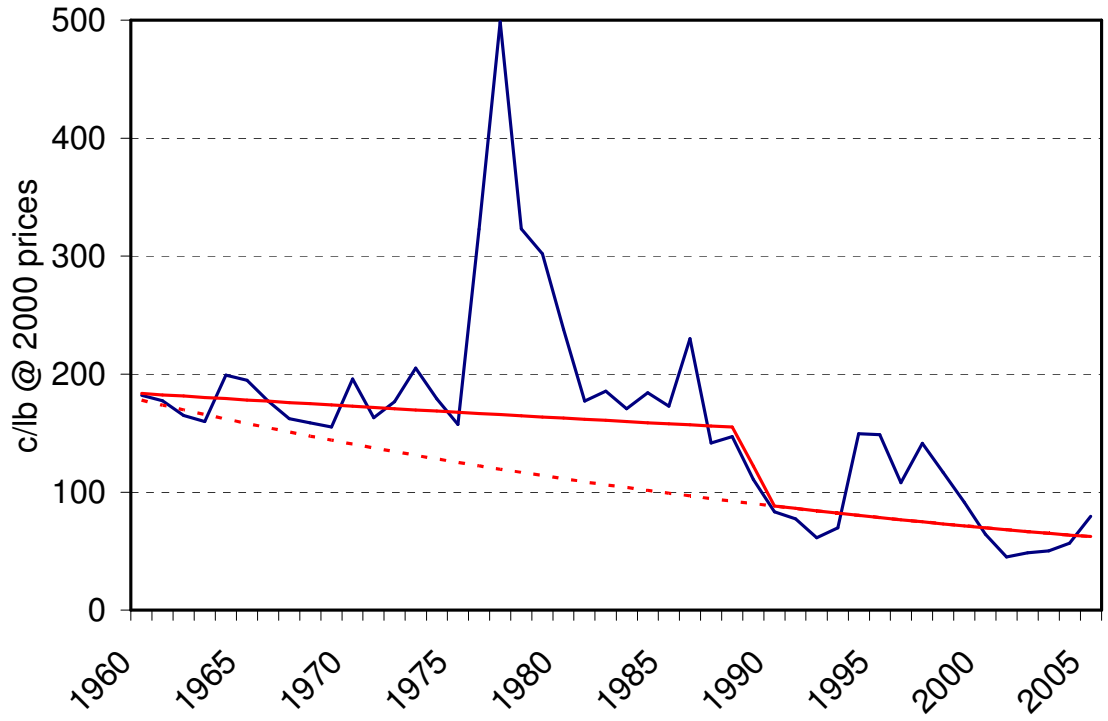

Figure 1: The Real ICO Indicator Price, 1960-2005, and Estimated Trend

It might be objected that the price fall in the first few post-independence years is likely to exaggerate the long term impact of the ending of controls. ICO export controls had obliged many

[1] The ACPC was the Association of Coffee Producing Countries. See Gilbert (1996, 2004) for discussion.

coffee exporting countries to store production in excess of export quota (plus domestic consumption plus non-controlled exports to non-member countries). These stocks were expensive to maintain – the coffee had been purchased but there were no countervailing revenues. Once controls were lifted, countries rushed to export surplus stocks and this process may have been encouraged by the perception that prices were in decline. Coffee consumption only responds modestly to low prices, so essentially the stocks were simply transferred to private sector agents in consuming countries, who were however only willing to hold inventory in excess of requirements if these could be expected to appreciate in value. Coffee prices therefore had to overshoot downwards – they fell further than their long run level in order that to generate the expectation of a profitable appreciation to that level.

On this view, only part of the post-independence price fall can therefore be regarded as permanent. Figure 1 charts annual averages of the ICO Indicator Price deflated by the US Producer Price Index (all items) from 1960 to 2005.[2] It is apparent that coffee prices were anomalously high over the 1976-79 price boom. Excluding those four years, the average coffee price from 1960 through to 1988, in terms of 2000 prices, was 178.3c/lb. The average price, again in 2000 values, over the period 1990-2005 has been just 87.5c/lb, 49% of the pre-1989 average. This is little different from the 43% estimate obtained from the price fall in the three years immediately following independence.

There is abundant evidence that the production of agricultural commodities is subject to productivity advance in the same way as that of manufactured goods. Whereas with manufactured goods, part of the productivity improvement is reflected in improvements in product quality (a 2005 automobile is superior in comfort, safety and reliability to a comparable 1985 model), productivity advances in agricultural products manifest themselves almost entirely in terms of lower prices (a bag of Colombian beans in 2005 is little different from a comparable bag in 1985). If no attempt is made to correct manufactures prices for quality improvement, the result is a trend fall in agricultural commodity prices relative to manufactures (Lipsey, 1994). In Gilbert (2004b), I estimated the average trend across a group of agricultural export commodities

[2] The 2005 figure is the average for January through August. Data sources: coffee prices – ICO; deflator, IMF, *International Financial Statistics*.

as 1.3% per annum. The possibility of a productivity-induced negative trend suggests that part of the fall in the price of coffee may be attributable to this factor and not to the ending of controls.

To investigate this, we estimated a model allowing different price trends pre and post-July 1989. The results indicate a negative trend in the deflated ICO Indicator Price of 0.6% per annum prior to July 1989, rising to 2.3% per annum once controls ended.[3] Figure 1 also imposes the price trend on the deflated ICO indicator prices. In current values the trend price is 72c/lb which may be compared with the August 2005 average of 83.9c/lb. The central forecast for 2010 is 64c/lb and for 2015 57c/lb. However, there is obviously the likelihood of considerable dispersion around these prices.

According to these estimates, the ending of controls was associated with two distinct effects:

- the coffee price fell by 41.5%, and
- the price trend accelerated from 0.6% per annum to 2.3% per annum.

A possible explanation for these results is that the ICO export controls suppressed the productivity advances which were occurring in other agricultural industries with the result that, when export controls were no longer imposed, a large "catch-up" took place. This catch-up is equivalent to 31 years of lost productivity growth, i.e. to growth over the period 1959-89. Note that the First International Coffee Agreement became active in 1962. Figure 1 shows the underlying trend over the control period as a broken line.

The difference between the actual price and the trend defines an irregular cycle with periodicity of around eleven years. The cycle may result from low investment in new trees and poor maintenance in periods of low prices with the consequence that production grows less fast than consumption. The average price over the first eight months of 2005 is 28% above trend. This suggests a negative medium term outlook for coffee prices although this could be offset if, as has been suggested, consumption growth is accelerating.

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[3] The trend model is $\ln P_t = \beta_0 + \beta_1 D89_t + \beta_2 (1 - D89_t) t + \beta_2 D89_t t + u_t$ where P is the deflated ICO Indicator Price, t is a time trend incrementing at one per annum and $D89$ is a dummy variable which takes the value zero over the period 1960-88, one over the period 1990-2005 and 0.5 in 1989. The four years 1976-79 were omitted in estimation.

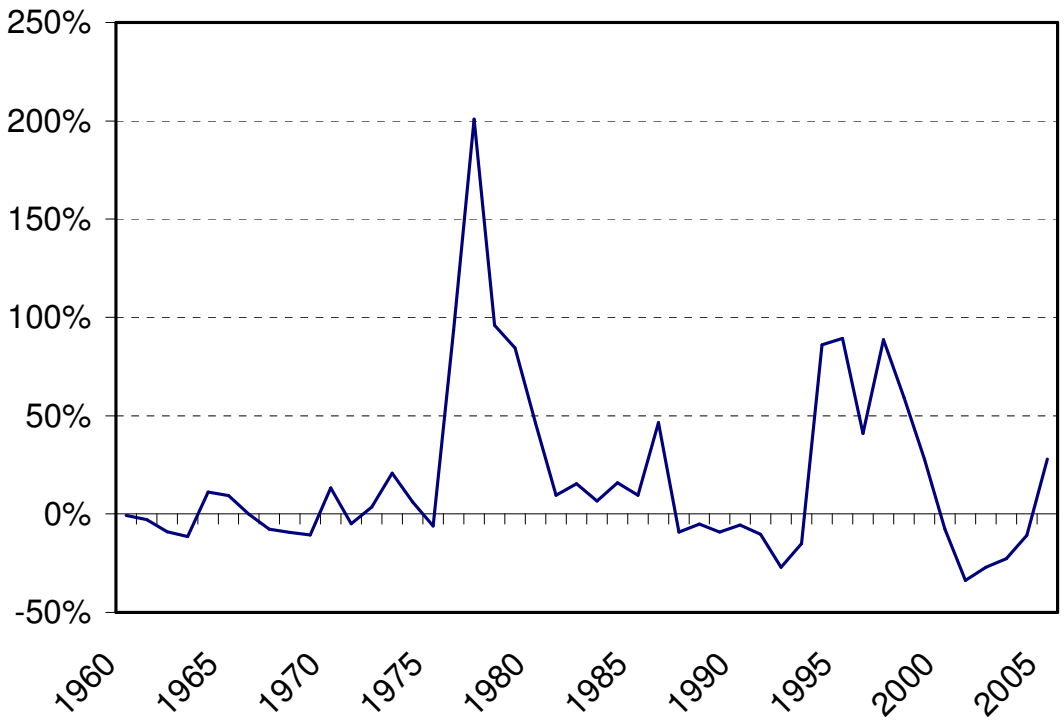

Figure 2: The Coffee Price Cycle

Has the ending of controls also increased price volatility? The most simple way to measure volatility is as the standard deviation of monthly price returns. Figure 3 graphs this volatility measure form 1960 to 2005. It is apparent that volatility increased sharply after the 1960s, but there does not appear to be any change over the past fifteen years relative to the previous two decades. Over the nineteen year period 1970-88, return volatility averaged 22.2% on an annual basis. Over the sixteen years 1990-5005, it averages 24.1%. The difference is small and statistically insignificant.[4] There is therefore no basis for claiming that the ending of coffee controls has either increased or decreased price volatility at the international level.[5]

[4] Excluding the four years 1976-79, return volatility over the earlier period averaged 19.7%. Even though this implies a larger difference with respect to the post-control period, this remains statistically insignificant.

[5] This contrasts with the conclusion, based on a shorter post-control sample, in Gilbert (1996). Gilbert (2004b) reaches similar conclusions for the entire group of agricultural commodities and Dehn et al. (2005) draw the same conclusion for Deaton-Miller indices of developing country primary prices.

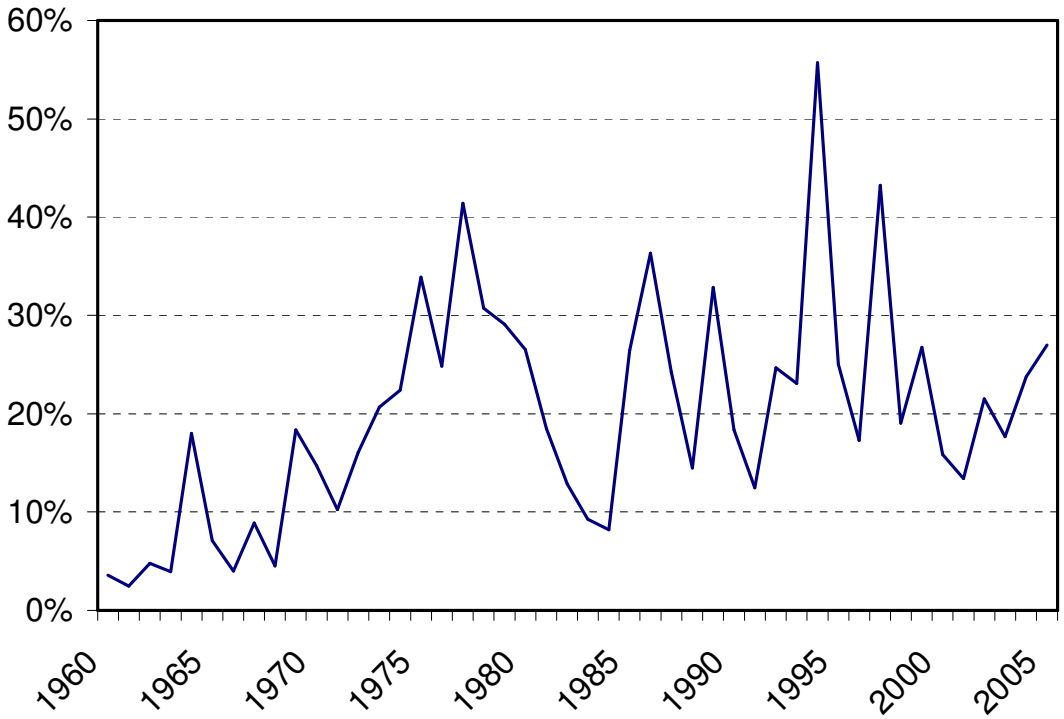

Figure 3: Coffee Return Volatility, 1960-2005

This is not to detract from the fact that volatility is high and poses a serious problem for producers, exporters and governments of coffee-exporting countries. In particular, market liberalization, and in particular the abolition or reduction in powers of domestic marketing boards, has resulted in price volatility being passed through much more directly to farmers. Intermediation of the benefits obtainable from risk management instruments to coffee farmers remains a significant challenge – see ITF (1999) and Dehn *et al*., (2005).

3. Coffee Price Differentials

Different coffees have very different characteristics, and this is particularly true of arabicas. Coffee producers, but even more so exporters, must therefore be concerned with differentials relative to market prices. The ICO distinguishes four different price sub-indices which are combined to form the Indicator Price. These are the prices of

- naturals (i.e. unwashed arabicas),

- Colombian milds,[6]
- other milds, and
- robustas.

Our interest lies in the differentials between these prices rather than their absolute level. Figure 4 charts the differentials of the price for Naturals, Colombian Milds and Robustas against those for Other Milds. There is little change in the relative prices of Colombian and Other Milds, but the price of Naturals appears to have fallen slightly against those of the washed arabicas. Most dramatic, however, is the sharp fall of the price of robustas relative to those of the arabica groups. Over the thirteen years 1976-88, the ICO robusta price averaged 87% of the Other Mild price. In the first six post-control years (1990-95), this proportion fell to 70% and over the past decade it has dropped further to 52%.

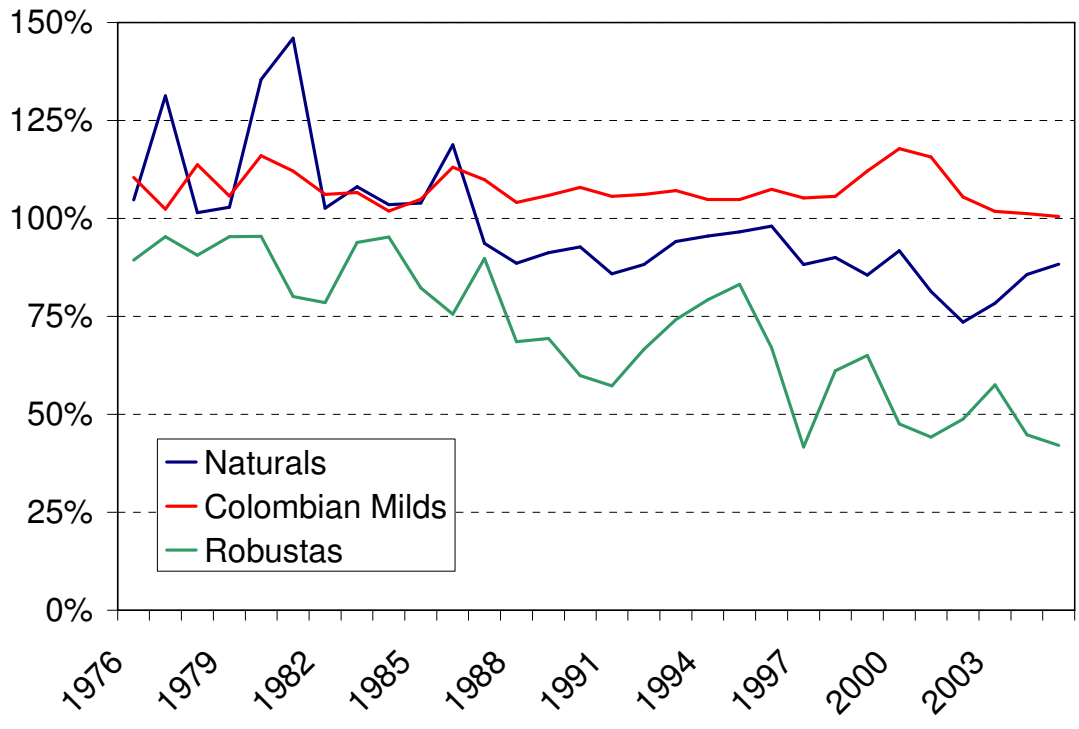

Figure 4: Relativities to the ICO Other Mild Price, 1976-2005

[6] In certain months, the ICO did not record a price for Colombian Milds. We interpolate the prices for the missing months on the basis of a constant differential relative to the Other Milds price.

A number of explanations may be offered for the relative decline in the price of robustas.

a) The most obvious is the large increase in robusta supply over the nineteen nineties from Brazil and Vietnam. However, this has been offset by declining production from other (mainly African producers) with the result that overall, there has been little change in the overall 30% share of robustas in total production.

b) Quota allocations in the coffee agreements may have been over-favourable to arabica producers. Elimination of these quotas has allowed an expansion of robusta production, in particular in Brazil. This is exactly the opposite of the accusation frequently made at the time of operation of these agreements that robusta producers were over-protected – see Gilbert (1996).

c) It is more easily possible to mechanize production of robustas, which grow on flat land, than of arabicas, which grow on mountain slopes. As a consequence, productivity advance has been faster in the robusta sector over the recent past.

d) Growth of the speciality market has favoured producers of high quality arabicas resulting in higher arabica prices.

Whatever the explanation for this change in relativities, it is worth asking whether they are permanent or transient. In other words, can one ask these differentials to revert back to their historical levels. If the opening up of the robusta-arabica relativity is due either to increased robusta supply – (a) and (b) above – or increased demand for arabicas – (d) above – we should expect the change in the differential to be reversed since there has been no change in relative production costs. On the other hand, more rapid productivity advance in the robusta sector – explanation (c) – implies a permanent change in the differential.

In statistical terms, this issue amounts to asking whether the differentials are "stationary".[7] The most simple test for non-stationarity is the Augmented Dickey-Fuller test – see, for example, Woodward (2003, p.610). Applied pair-wise to the three differentials charted in Figure 4, the ADF(3) test confirms the stationarity of the differential between Colombian and Other Milds and

[7] i.e. whether the mean of the series is constant over time.

between Naturals and other Milds but rejects stationarity for the differential between Robustas and Other Milds.[8]

These tests imply that it is reasonable to suppose that variations in the differentials between the three arabica indices are transient, but the change in the robusta-arabica differential is permanent. In other words, there is no statistical basis for expecting robusta prices to revert to their previous differential with respect to arabica prices. This is consistent with the view that the relative decline of robusta prices is due to more rapid technical progress in the robusta sector, perhaps as the consequence of increased mechanization of production.

Table 1
Monthly return Correlations 1976-88 and 1990-2005

	Naturals	**Colombian Milds**	**Other Milds**	**Robustas**
Naturals		0.607	0.656	0.604
Colombian Milds	*0.892*		0.820	0.699
Other Milds	*0.942*	*0.952*		0.853
Robustas	*0.752*	*0.727*	*0.773*	

The table shows the correlations of monthly returns in the four ICO coffee sub-indices over the period February 1976 – December 1988 (above diagonal) and January 1990 – August 2005 (italicized, below diagonal).

Despite the lack of cointegration between robusta and arabica prices, the two continue to move together closely in the short term. Table 1 shows the correlations of monthly returns on the four ICO sub-indices for 1976-88 (above the diagonal) and 1990-2005 (beneath the diagonal). With one exception (the correlation between Other Milds and Robustas) the correlations are higher for the post-control period than the pre-control period. In the short term, coffee prices therefore appear to move together at least as much now as in the control period, even if long term movements have diverged.

[8] ADF(3) statistics: Colombian and Other Milds -4.89, Naturals and Other Milds -3.36, Robustas and Other Milds -1.89. The 95% critical value for this sample size is -2.87; the 99% critical value is – 3.45. The ADF test imposes a unit cointegrating vector. The Johansen procedure (Johansen, 1988, Johansen and Julius, 1990) is more general but has less power, when, as here, unit restrictions are natural.

4. Production

Production differs from consumption only by accumulation or decumulation of stocks. Since coffee cannot be forced down unwilling throats, this constraint forces production to grow in line with consumption over the longer term. Figure 5 charts aggregate production growth over the period 1960-61 to 2003-04 together with the underlying trend (solid line).[9] Once allowance is made for price responsiveness in production, there is no statistical evidence for any variability in the trend, which shows production growing at an annual rate of 1.35%. However, since the ICO controls led to prices diverging increasingly above trend over the nineteen seventies and eighties (see section 2), the lifting of controls resulted in a temporary flattening of the trend in production. The broken line in Figure 5 shows the trend in production in the absence of ICO controls. According to these estimates, the suppression of the productivity trend under the coffee agreements stimulated additional production amounting to the order of 5% of total production by the late nineteen eighties.

Within this overall picture, there has been considerable change in the geographical location of production, but less in the composition of the coffee produces. Figures 6a and 6b show the mix of coffee production averaged respectively over the 1991-92 and 1992-93 crop years and 2000-01 and 2001-02 crop years. The main change has been the sharp change in production of Colombian milds, produced not also in Colombia but also in Kenya and Tanzania, but the overall robusta share has only increased marginally despite large increases in robusta production in Brazil and Vietnam. The implication is that the competition between origins within the robusta sector has been more intense than the competition between arabicas and robustas.

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[9] Sources: FAO, 1961-75, ICO 1976-2004. Data relate to ICO producing member countries. The trend model is $\ln Q_t = \beta_0 + \beta_1 t + \sum_{j=1}^{5} \beta_{2j} \ln\left(\frac{P_{t-j}}{TP_{t-j}}\right) + u_t$ where Q is production, P is the deflated ICO Indicator Price as defined in section 2, TP is the underlying trend in this price, also discussed in section 2, and u is a disturbance term. The estimates set $\beta_{21} = \beta_{23} = 0$. The sum of the remaining three β coefficients is estimated as 0.072. I do not discuss coffee consumption in this paper because there is no evidence that this has been significantly affected by the ending of ICO controls. Note that, although in the short term a rise in consumption generates higher prices, in the long run, prices fall back towards production costs and the result is a higher level of consumption.

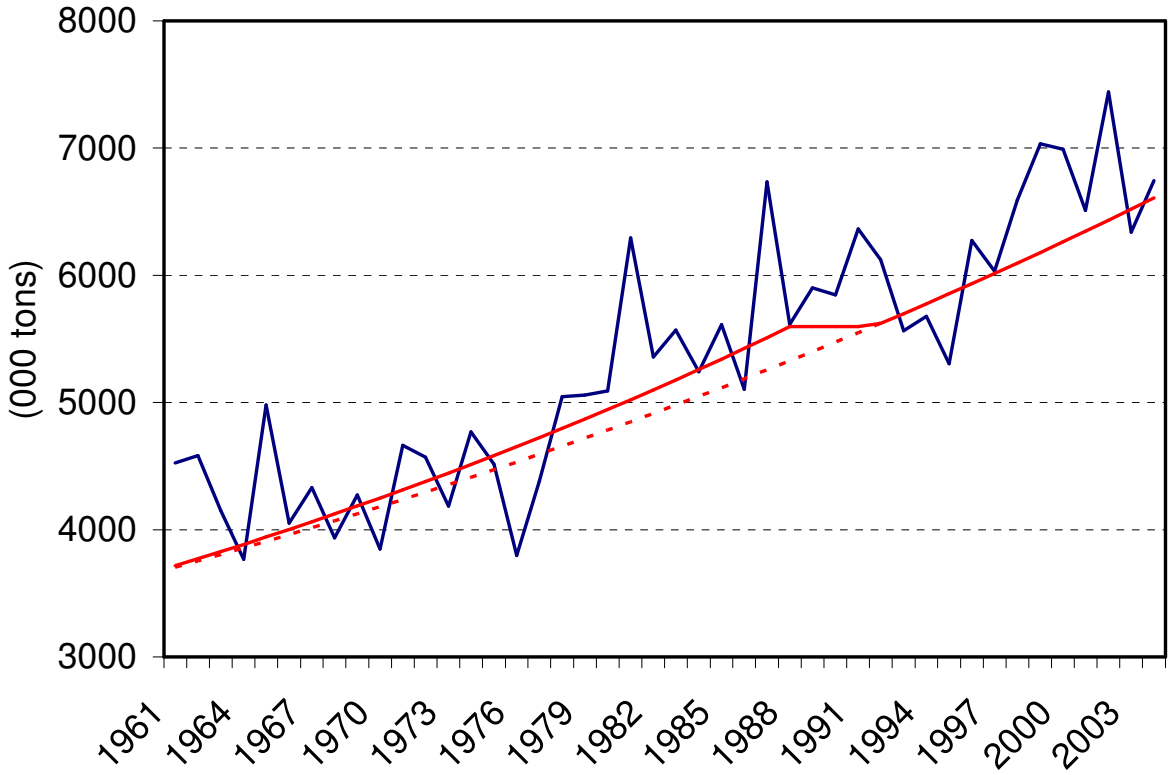


Figure 5: Production of ICO exporting members and underlying trend

There has been more movement in the distribution of production across origins. Figure 7 disaggregates production, averaged over five year periods from the start of the nineteen sixties, across various national and regional groups.[10] I remark on four movements

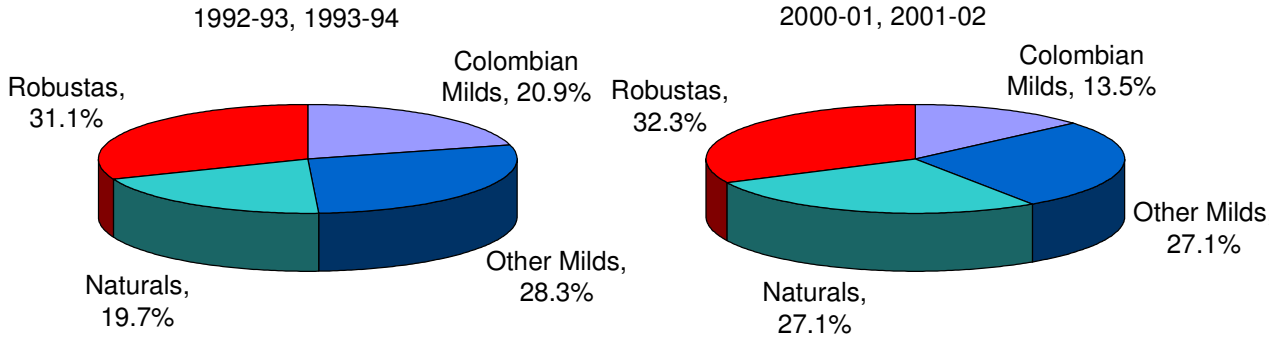
- The first relates to Brazil's share of world coffee production. This declined over the first two decades of control from 43% to 24% but has now recovered to 32%. The decline of the Brazilian share over the period of coffee controls is consistent with the view that Brazil sacrificed most, in terms of ceding market share, over the control period.
- The share of the African robusta producers grew steadily over the nineteen sixties to peak at 24% in 1970-74. It has subsequently fallen back to 9%. This is consistent with

[10] Source: ICO. African production is disaggregated between arabica and robusta countries on the basis of the principal type produced. Kenya and Tanzania are therefore regarded ad arabica producers and Cameroon and Uganda as robusta producers despite some production of the other type. The figures for Brazil also aggregate arabica and robusta production.

the view that coffee controls, at least under the first two International Coffee Agreements, effectively sheltered these producers.

- Vietnam's share of the market has increased sharply over the past fifteen years. It is difficult to imagine that an increase of this order could have been negotiated in the presence of export quota controls.
- Colombia and the remaining arabica producers saw a small increase in share in the nineteen seventies and eighties but now have similar shares to the early sixties.

The broad picture, therefore, on the robusta side is that African producers have been losing market share to Brazil and Vietnam.



Figures 6a and 6b: Composition of Coffee by Type

The rise in Brazilian production and the relative decline of the African origins is almost certainly the consequence of differences in production costs. It is difficult to be confident about relative cost levels because of differences in measurement methodologies and also because, in countries with large producing areas, these may differ substantially across the country. Figure 8a (arabicas) and 8b (robustas) show estimates of average fob production costs over the period 1996-2001put together from a number of different sources by Nestlé.[11] These figures show Brazil to be the lowest cost producer of both arabicas and robustas. Colombia and the Central American mild producers have highest costs in the arabica sector with the African producers towards the middle.

[11] Source: Presentation, Nestlé SRI Forum, the London Stock Exchange, 12th may 2004. Nestlé cite the ICO, Technoserve, the USDA and the World Bank.

In robustas, the Asian producers have mid-range prices leaving the African producers with the highest costs.

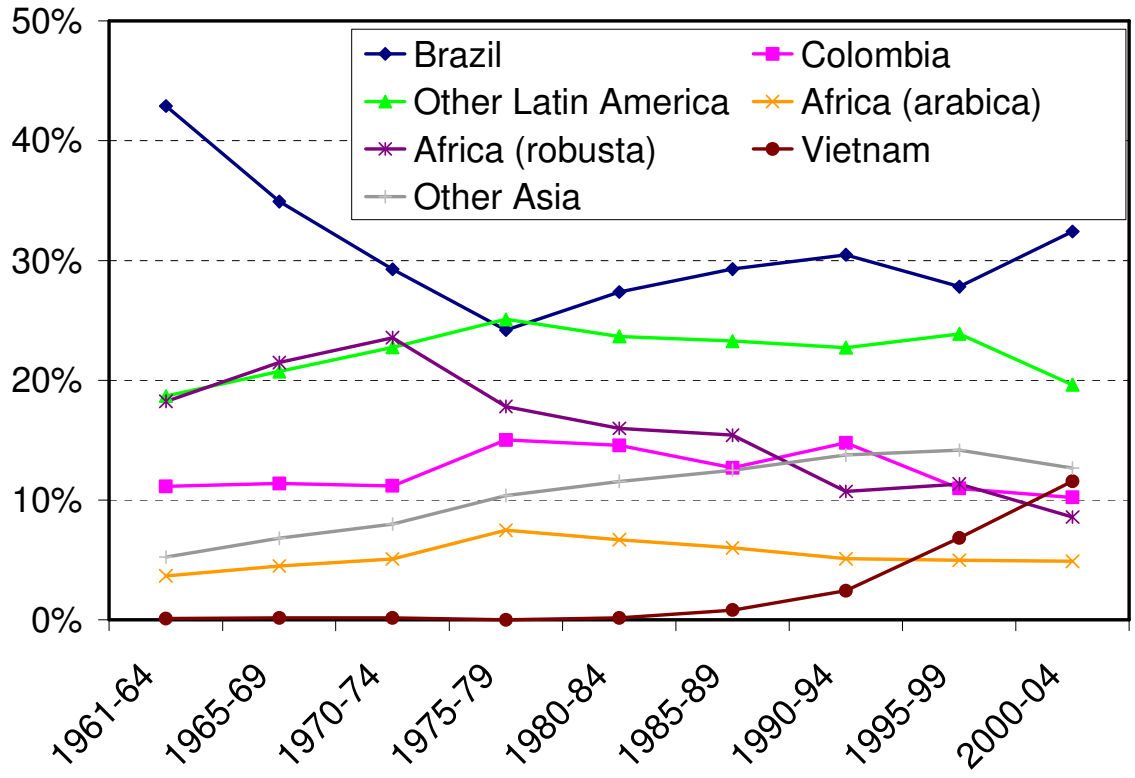
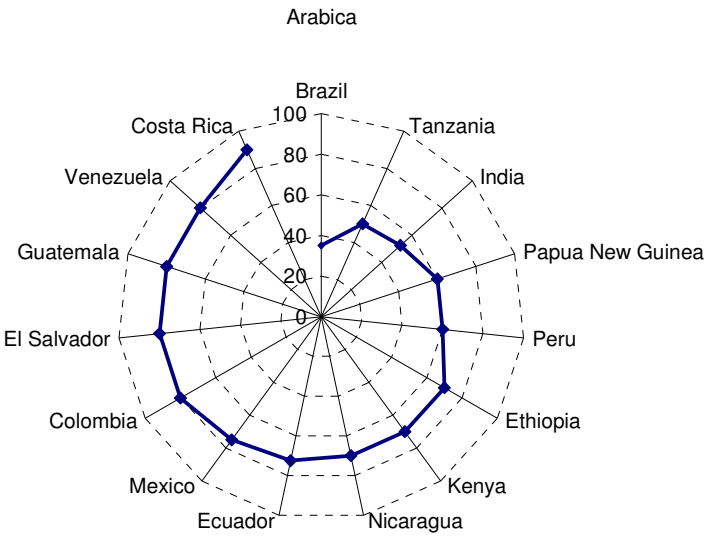
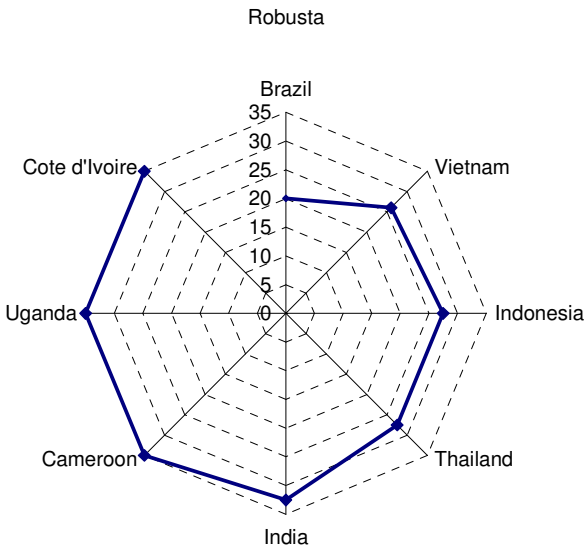


Figure 7: Production Shares, ICO Exporting Members

If these figures are to be trusted, they suggest that Brazil will continue to increase market share at the expense of Colombia and the Central Americans in arabicas and of the Africans in the robusta sector. But the effects are likely to be most dramatic in robustas where there is greater homogeneity, and so beans from different origins are more closely substitutable.





Figures 8a and 8b: Average FOB Production Costs, 1996-2001

5. Producer Concentration

Competition between producers is likely to have the effect that new investment will take place in countries where production costs are lowest. Instead, in the controlled environment, investment location is likely to have been at least partly determined by export quota allocations. One should therefore expect to see production concentration across countries increasing in the post-control period.

Concentration is typically measured either by the share of the largest n producers (the C_n measure) or by the Herfindahl Index (H). The C_n measure suffers from being sensitive to the choice of n, and in particular does not pay attention to the relative sizes of the n largest producers. The Herfindahl Index, defined as the sum of the squared production shares, i.e. $H = \sum_{i=1}^{N} w_i^2$, where w_i is the share of the ith producer and there is a total of N producers, has the advantage of treating all N producers symmetrically, but is less intuitive.[12]

[12] Note that in a completely competitive industry in which all producers have very small shares, H is close to zero, while in a completely monopolized industry where there is a single producer, H is equal to unity. However, despite the fact that both the C_n and H indices are constrained to lie within the unit interval, intermediate values of the two indices are not directly comparable. The Hefindahl index also has the

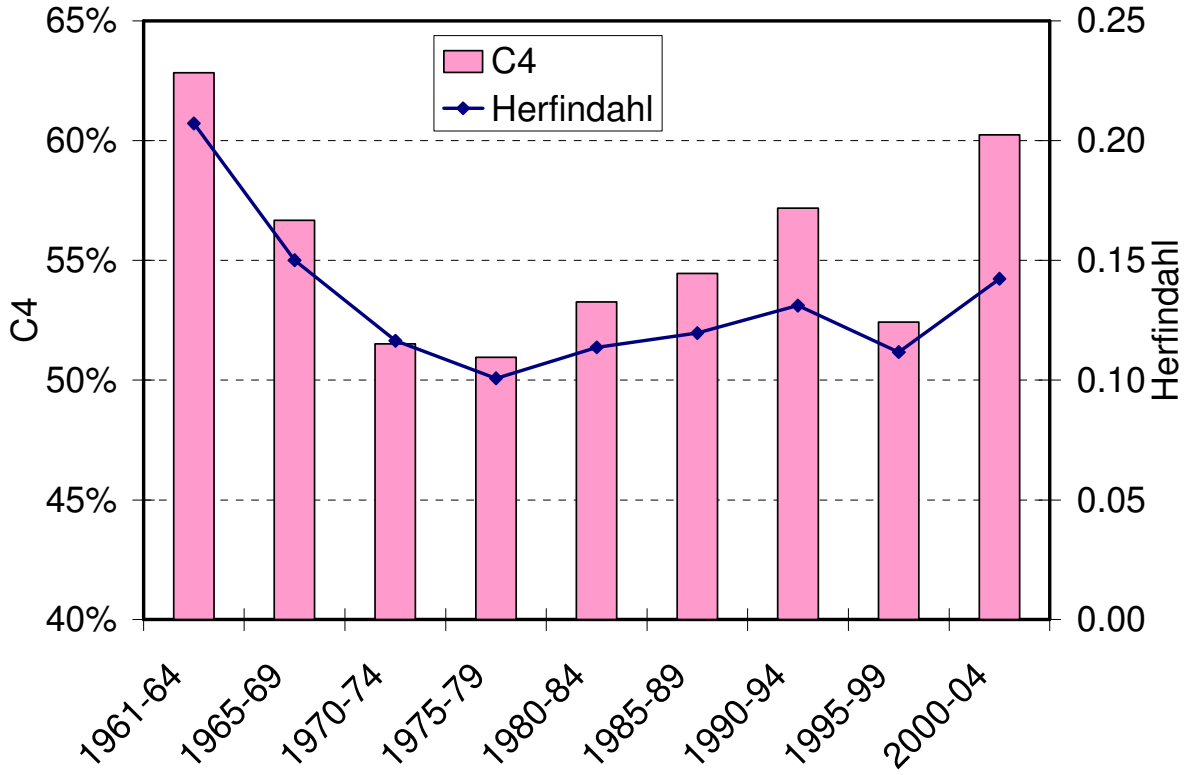


Figure 9: Production Concentration, ICO Exporting Member Countries

Figure 9 graphs the C_4 index (the combined share of the four largest producers) and the Herfindahl index H using production shares averaged over five year periods from the start of the nineteen sixties. Both measures show concentration declining over nineteen sixties and seventies as Brazil ceded production share to other producers, but with an increase in concentration since the nineteen eighties.[13] The production and cost trends discussed above in section 4 suggest that concentration is likely to rise further in the mid to long term with likely further expansion in Brazil, and perhaps also in Asia, at the expenses of Central American and African producers.

Given Brazil's increasing market share, one can ask whether Brazil's market share will be sufficient to allow it to unilaterally exercise market power. (This puts to one side the issue of

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advantage that in the most simple possible model of imperfect competition, the price-cost margin is proportional to H.

[13] The temporary decline in concentration in the first half of the nineteen nineties is associated with the emergence of Vietnam as a mid-sized producer. Bow that Vietnam has become the second largest producer, concentration has risen.

whether there would be a national consensus for Brazil to act in this way or whether this would be practical within the market structures which now exist. I am sceptical on both these issues). On reasonable assumptions, it is easy to demonstrate that Brazil might obtain some short term advantage, in terms of in creased coffee revenues, from supply limitation but would lose over the longer term as other producers expand production to make good the shortfall.[14] This was essentially the Brazilian experience during the coffee agreements.

If supply management ever does become necessary, it must, as previously, be multilateral in order to avoid these free-riding problems. Broadly speaking, the higher the level of concentration among producers, the easier it should be to establish cooperation. On the other hand, a country which anticipates the possibility of a significant increase in market share is unlikely to agree to production or export quotas based on historical shares. On this basis, I would expect that producers will find it difficult to re-establish co-operation over the next decade, or perhaps even longer, while Brazil, and perhaps also Asian producers, see their market shares as increasing, but that in the very long term, by which time Brazil may have established a dominant position, supply management may again become a realistic prospect in the event of a coffee crisis.

6. Exchange Rates

The discussion in sections 4 and 5 has taken production costs as given. Costs can change for a number of distinct reasons:

- Producers can adopt more efficient production methods.
- Intermediation can be improved. This was one of the main objectives of the market liberalization programmes adopted in many coffee-producing countries – see Akiyama *et al*., (2001).

[14] A 1% cut in Brazilian production will raise the world price by α% where $\alpha = w/[e + (1-w)\varepsilon]$% and w is Brazil's share of world production, e is the elasticity of consumption demand and ε is the elasticity of non-Brazilian supply. Take $w = 1/3$ and $e = 0.1$. In the short run, supply is inelastic so take $\varepsilon = 0.1$. Then $\alpha = 2$% and Brazilian revenues rise by 1% for each 1% production cut. The coffee control experience suggests that, in the long run, the non-Brazilian supply elasticity is relatively high. If we take $\varepsilon = 5$, we obtain $\alpha = 0.1$, so a 1% cut in Brazilian production lowers producer revenues by 0.9%. Brazil has market power in the short but not the long run.

- Taxation levels can be changed.
- Exchange rates can change, translating a given level of local currency costs into a higher or lower level of dollar costs.

In this section I focus on exchange rates.

The share of coffee in total exports is important in applying these principles for the coffee sector. In a country in which coffee is responsible for only a small of total export revenues, changes in coffee revenues will have little effect on the exchange rate although changes in the country's exchange rate certainly will impact on the coffee sector. By contrast, in countries in which coffee accounts for a large share of exports, changes in coffee export revenues will have a significant effect on exchange rates. In particular, in coffee exporting countries in which dollar production costs are high and export share is declining and in which coffee is a principal export, this decline is likely to exert pressure for currency depreciation. This will have the effect of translating the current level of local currency costs into a lower level of dollar costs, allowing the coffee sector to continue to compete.

Figure 10 shows the shares of coffee revenue in total exports of the twenty most important ICO coffee exporting countries averaged over the four years 2000-03.[15] Four countries have coffee export shares in excess of 15%: Ethiopia, Honduras, Nicaragua and Uganda. Coffee plays an important role in the macro-economy of these countries and one should expect real exchange rates to adjust to ensure continued competitiveness of their coffee sectors. This is broadly what we find – see Figure 11 which plots percentage real exchange rate depreciation over the period since 1988, against the share of coffee in total exports averaged over 2000-03 for the countries included in Figure 10.[16] The correlation is 0.365. The four countries with a coffee share in total exports in excess of 15% all witnessed real depreciations over this period. These real depreciations have two effects:

[15] Source: coffee export revenues – FAO, Agricultural Statistics Database; total export revenues – IMF, *International Financial Statistics*. Figures for Cameroon and Ethiopia are for 2000-02.

[16] The real exchange rate adjusts the nominal rate against the U.S. dollar by the relativity of the CPI in the country in question and that if the USA. Use of the GDP deflator would be preferable but this is not available for all countries. Data source: in Figure 10.

- The burden of adjustment to lower dollar prices is spread over the entire economy, and in particular is passed on to urban consumers who are required to pay more for imported goods.
- By maintaining local prices, the impact of declining prices on the profitability of coffee production is reduced.

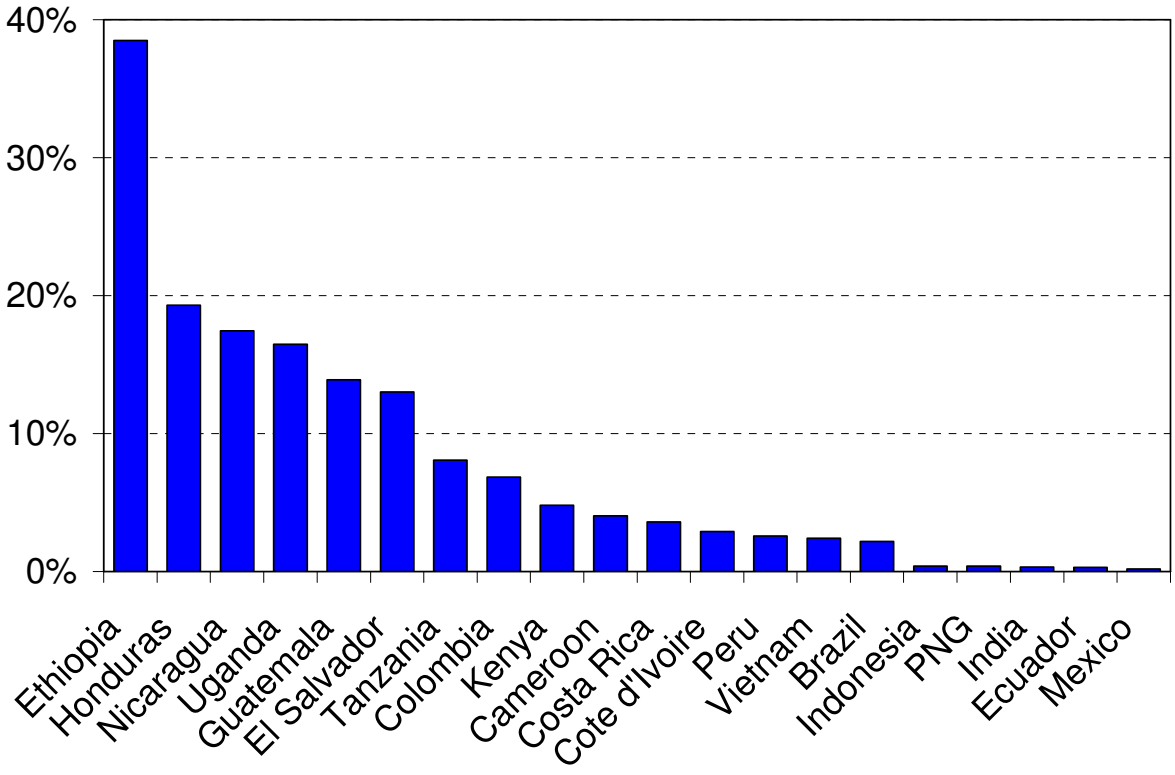

Figure 10: Share of Coffee in Total Export revenues, 2000-03

The theory of comparative advantage teaches us that a country will export those goods (or services) in which it has a comparative advantage. Absolute cost advantage does not automatically translate into comparative advantage because, if they are to import, countries must export something. If the country's exchange rate is allowed to find its own level, it will adjust such that those goods in which it has a comparative advantage also enjoy an absolute advantage when translated from local currency into U.S. dollars.

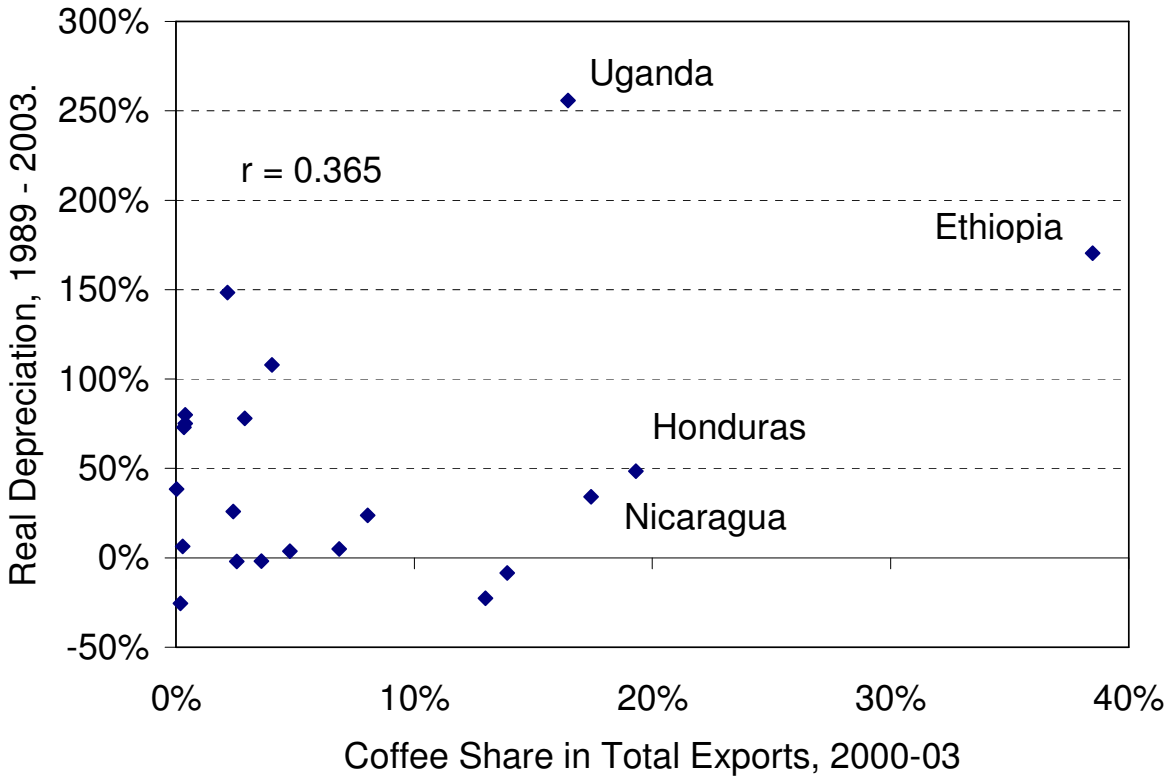

Figure 11: Real Depreciation, 1989-2003 & Share of Coffee in Total Exports, 2000-03

The effects can be seen in Figure 12 which charts the real local currency equivalents of ICO prices, distinguished by bean type, comparing the four year period 2000-03 with the 1988, the final year of ICO controls.[17] On average, prices were 44% of their 1988 value across these twenty countries, but in three countries – Brazil, Ethiopia and Uganda – the real local value of ICO prices is estimated to have decreased by less than 25%. All three of these countries saw real depreciations, and in two of them – Ethiopia and Uganda – the depreciations were at least partly induced by the need to ensure the continued viability of the coffee sectors.[18]

[17] Figures for Cameroon and Ethiopia are for 2000-02. The following arabica-robusta proportions were used for countries producing both types of coffee – Brazil 90:10, Cameroon: 5:95, Ecuador 50:50, India: 33:67, Indonesia 15:85, Tanzania 75:25, Uganda 10:90.

[18] The real depreciation of the Ugandan shilling resulted problems affecting exports of cotton as well as those of coffee. See Cashin *et al.* (2003, 2005) for a discussion of commodity currencies.

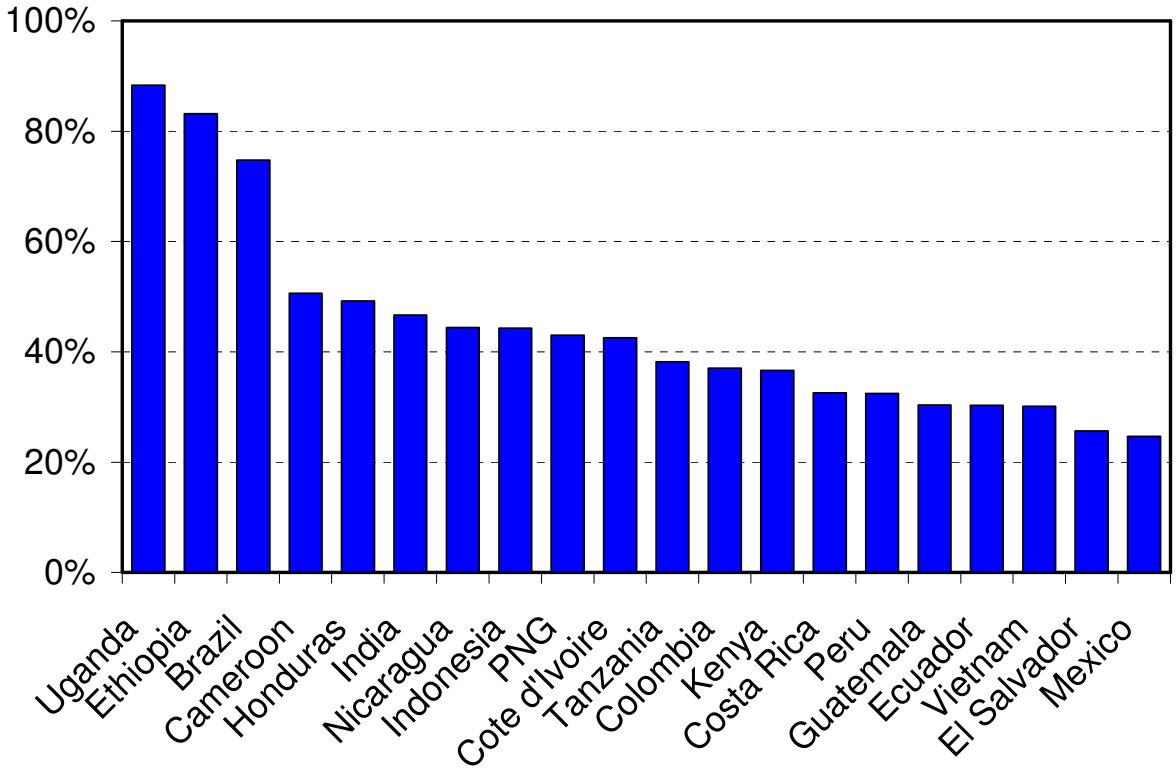

Figure 12: Real Local Currency Equivalents of ICO Prices, 2000-03 Relative to 1988

In countries in which coffee has national importance and where the exchange rate is flexible, real exchange rate movements will ensure continued viability of the coffee sector. This is an important element in the sustainability debate. In countries in which coffee has a lower degree of national less importance, and in countries in which the exchange rate is less flexible, proportionately greater efforts will be required to ensure viable coffee sectors. In particular, it may be difficult to sustain profitable coffee production in Central American and Asian countries in which increased prosperity results in real appreciation, and also in those African countries in which membership of a currency bloc limits real exchange rate variation.[19]

[19] The CFA franc structures generate other benefits, and the comments made in the text are only one element in an overall assessment of that system.

7. Conclusions

This section briefly summarizes the conclusions from the preceding discussion.

a) The ending of coffee controls resulted in a one time drop in coffee prices of around 40% plus the re-emergence of the previously suppressed negative price trend (around 2¼% p.a.). The price trend results from productivity advance, common across all agricultural commodities. The price fall may be though of as catch-up on this productivity trend. If that is the case, the fall in prices since the ending of controls appears permanent, not transient.

b) Coffee prices fluctuate around the negative trend with a cycle of around eleven years. Currently, coffee prices are almost 30% above estimated trend prices. In the absence of any acceleration of consumption growth, prices should be expected to fall back to trend over the coming years.

c) Arabicas, which traded at a small premium to robustas in the control period, have fared much better than robustas with the premium widening to around 60% over robustas. This has happened even though there has been little change in the arabica-robusta mix. The evidence is consistent with more rapid productivity advance in the robusta sector. If that is the case, it is improbable that the historical relativities will be re-established.

d) Price volatility remains high, but not notably higher than in the seventies and eighties. It is difficult to discern any effect of the ending of controls in increasing price volatility at the level of world prices.

e) Export controls favoured Central American producers and African (robusta and arabica) producers, who benefited from increased market shares, largely at the expense of Brazil. Production concentration fell. Brazil, which with the Asian producers benefits from low production costs, has expanded production rapidly in the post-control period. Concentration is now increasing.

f) Long run supply elasticities are high. No producer or group of producers has sufficient market power to benefit from restricting production (although there could be short term advantage). In the medium term, where there is no immediate requirement for supply management, the rapid evolution of national shares in the world coffee trade, is likely to make producer even more difficult than previously. However, once market shares stabilize, the increased level of producer concentration may make multilateral supply management easier in the longer term, should such a need arise.

g) For countries which have high export dependence on coffee, operation of a flexible exchange rate regime will ensure that the sector remains profitable. This is not costless. A flexible exchange rate spreads adjustment costs across the entire economy while a fixed rate, or participation in a currency zone, confines adjustment to the coffee sector. This is an important element in the sustainability debate. If coffee is to remain sustainable in countries with high production costs and with fixed or semi-fixed exchange rates, much greater efforts will be needed in other directions to ensure profitability of the sector.

I conclude with some more general observations. From the outside, the coffee industry appears markedly healthier now, at the time of the Second World Coffee Conference, than four years ago at the time of the first conference. Most obviously, prices are higher, although, as I have indicated, this may not last. More importantly, most origins have found that they can survive and even be profitable in a competitive environment, although the sacrifices have been greater, and less equally shared, in some countries than in others. As should not be surprising in a market environment, profitability is higher in certain countries than in others, and it is this which is driving the trend towards increased concentration among producers. That is likely to imply that some previously important coffee origins become more marginal. The governments of these countries need to devote serious thought both towards their policies towards the sector and towards the overall macroeconomic environment.

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