The future of the European sugar market :
A case for quotas

Jean-Marc Boussard [1],

[1] retired, formerly INRA, Paris France

Abstract— **The advertised EC policy toward sugar is clearly to let market drive supply and demand. But there exist reasons to think that the setting up of the traditional quota policy was not a consequence of chance, or of an efficient lobbying system by farmers, but of practical necessity and of efficiency, in face of market failures. In view of this reasoning, it is not impossible that a large crisis in the more or less remote future leads to reinstall a sugar quota system which probably should had to be reformed, but should never have been suppressed.**

Keywords— **quotas, cobweb, market**

I. INTRODUCTION

A European sugar market stands as a very new idea, after so many years of quotas, administered prices and other deviations from market law. Yet, it is indeed a very old idea, so old that, after such a long time of oblivion, it looks now as being new. In most European countries, sugar production has been more or less isolated from market since at least 1931 (the first international sugar agreement, already defining production quotas among stakeholders), and even earlier (remember the Napoleonic "continental blockade", at the origin of the development of sugar beet in Europe). Especially since the Common market inception, the European sugar industry has been characterized by a government fixed domestic price, and a system of production quotas.

In face of this situation, it is generally agreed upon that we should come back to the good old time when free market was matching supply and demand without causing headaches to EC executives. Actually, common elementary economic theory shows that market in this respect is normally very efficient, equating marginal cost with price, thus maximizing the global surplus of consumer and producer together. In addition, at international level, by exploiting the benefits from comparative advantage, the market guarantees the minimal price compatible with demand, thus benefiting to consumer, while benefiting also the poor, the only workers capable of producing at that price. Who could resist such a set of advantages?

Yet, before answering this question, we must perhaps ask ourselves why is it that, while the advantages were also present at the origin, our forerunners decided to leave them out, and judged preferable disconnecting sugar from market. Indeed, a market is a fairly "natural" institution, which normally emerges spontaneously, as soon as the benefits of specialisation and of comparative advantage become apparent. A sugar market existed in Europe before 1931. On the contrary, the decision of twisting markets in order to substitute another mode of regulation for production and consumption requires political decisions which, at least in principle, should not be taken lightly. What was the motivation, at that time, for isolating European sugar national productions from market? And have these reasons disappeared, thus justifying the new course of government action, coming back to the old idea of market?

I - WHY HAVE OLD PRACTITIONNEERS CUT THE LINK BETWEEN AGRICULTURE AND MARKET?

Actually, these motives were expressed in the debates regarding the 1931 sugar agreement, and can be summarized in five words: the market was not functioning properly (despite efforts in 1903, see: [1]). Indeed, at that time as now, the free international market resulted in prices sometime much too high and sometimes much too low to reflect the actual long run cost of production. In such situations, producers benefit and consumers suffer (or the contrary), but in any case, losses are greater than benefits. A large body of literature was devoted to this issue in the aftermath of the Second World War. Let us only remember Waugh [2], Oi[3], Massell [4] and many others. They do not congregate on the ultimate beneficiary of instability: for instance, Oi consider instability is good for the consumer, while others assert that consumer pay the cost at the end. But all agree upon at least one thing: instability is bad for society. In this context, any institutional innovation capable of making price closer from cost brings a social benefit.

In face of such a situation, actions are requested to correct failures. But action cannot be efficient unless the reason for the failure is correctly assessed. The reasons for this situation in the case of sugar (contrasting with many other goods and services) are deep and long lasting. They were analysed by many now forgotten economists such as Galiani[5](in 1770 !) or Ezekiel[6] (at the end of the 30's) : with production delays and a low price demand elasticity, the market equilibrium point is instable (in the mechanical meaning of the word : in the vicinity of equilibrium, forces which drive the system lead it further away if it is fortuitously deviated from this point, just as a ball in equilibrium at the sharp end of a pencil).

The old "cobweb theorem" actually shows that. Let the slopes of the demand and supply curves be α and a, respectively, while production decisions are based on naive expectations (producer assume the current price will last at least one season) . Then, if $|\alpha/a| > 1$, any departure from equilibrium will result in a new price even more distant from the true equilibrium price than the initial one. On the contrary, with $|\alpha/a| < 1$, each successive price will be closer to equilibrium, in such a way that the market "converges" to optimum. For that reason, the situation of markets is quite different according to the supply and demand parameters. This is the reason for why Ezekiel considered possible to let free market operate in the case of "luxury" products, while State intervention was required for first need good – especially, agricultural goods[1].

The weakness of the cobweb model is of course that it is not possible to imagine prices and quantities swinging between -∞ and +∞. When the system comes vary far from equilibrium, there must exist other forces tending to turn it back toward it. But price can never stay for long in the vicinity of the long run equilibrium point, resulting in chaotic motions (again, in the mathematical sense of the word) for the price and production time series. Boussard[7], among many others, showed that such mechanisms are possible.

In such a context, government actions aiming at regulating market, especially with production quotas, can be largely beneficial in terms of welfare. This is especially the case for sugar.

II - WHICH FUTURE FOR THE WORLD SUGAR ?

In effect, the consequences of a liberalisation of the sugar industry have been examined in this context by Boussard and Piketty[8]: they build a model of the sugar food chain which give the results presented on figure 1 and 2 : as we can see, prices are much more volatile "with" than "without" liberalisation.
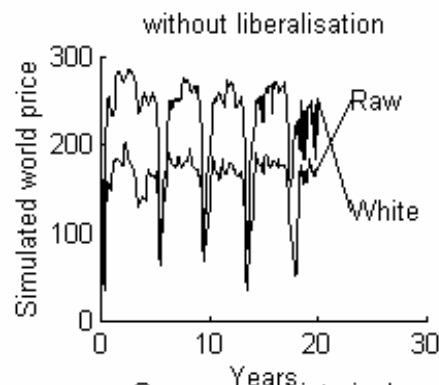

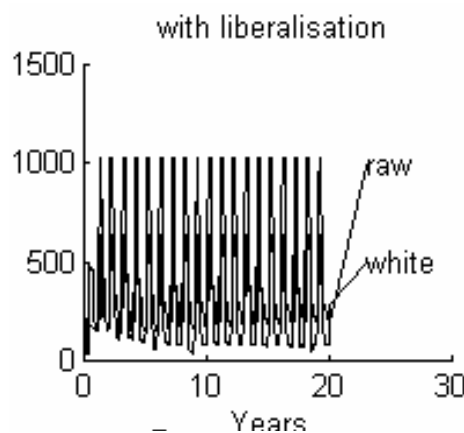Figure 1 : World prices for raw and white sugar, present situation

Figure 2 : World prices for raw and white sugar, liberalized

Then, who benefit and who suffer from the change ? The surplus accruing to various agents in the chain are shown below (figures 3 to 6). It is readily shown that farmers suffer from reduced production, while consumers suffer from higher mean price. This is a classical effect of introducing risk considerations in a model. Government – especially developing countries government – suffer from the reduction of import taxe – it is true, at the same time, that governments of rich countries avoid a few subsidies, although not so much in the case of sugar, because subsidies are paid by consumers. Finally, the major beneficiaries are the refiners, who benefit from speculating on stocks – although without significant effects on the price volatility.

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[1] The argument was made use of in convincing the reluctant Supreme Court not to reject the Roosevelt Agricultural Adjustment Act. See Lindsey [9]

How can such a disaster be explained? Essentially, by the bad functioning of markets, which calls for State intervention in order to correct market failure. And how can State intervene in such a situation ? Precisely, by setting up a system of production quotas, just as the sugar practitioners of 1903 did very rightly.
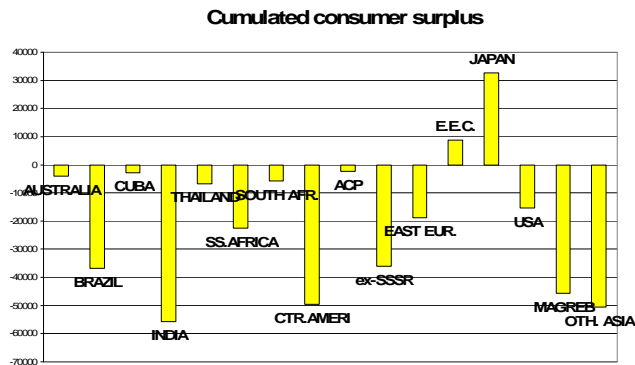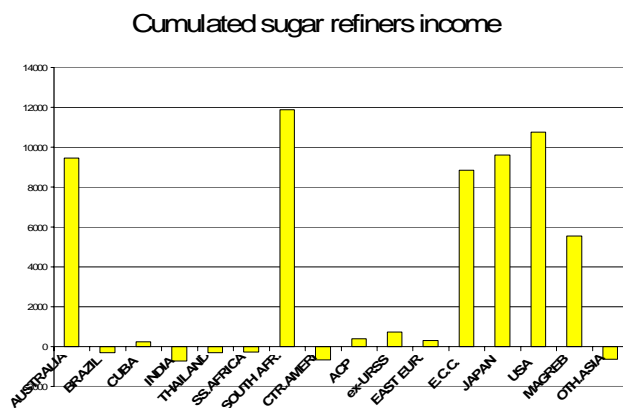

Figure 3 : Consumer surplus

Figure 5 : Sugar refiners surplus

In effect, a natural way of settling the problem just stated is to provide producers with a guaranteed price. If the price is in the vicinity of the long run equilibrium price, the system is in principle costless for the government, because what is lost when external price is low is regained in periods of high prices. This is true in a static reasoning. It is not anymore true in dynamics: in the long run, with a production function homogenous and of degree one, the production, in face of an invariant price, is either zero or infinite. In such a case, assuming the price is high enough for avoiding zero production, the government will be

obliged to accept enormous disposal costs[2]. Hence the necessity of providing a price guarantee for a limited quantity only.
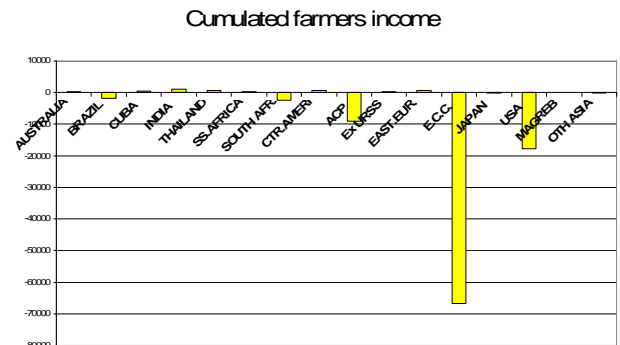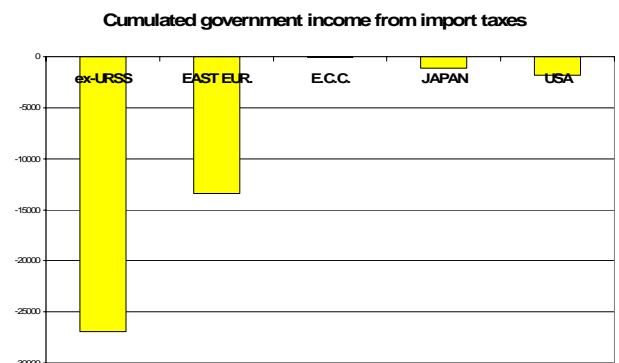

Figure 4 : Producers surplus

Figure 6 : Goverrnment taxes

In this way, the quota system is quite similar to a futures market – except that the cost of the risk tacking is fully born by the State a no price, while, otherwise, speculators must be rewarded for having accepted carrying risks in the place of farmers. It is by no means contradictory with markets, since quantities exceeding quotas can very well be traded at the producer risks. Only, in that case, it is necessary that the total allocated quotas be less than domestic production: then, any quantity sold on the world market is produced at marginal cost plus a risk premium, in exactly the same way as in the absence of any production policy. In that respect,

[2] As a matter of fact, this is exactly what happened in the EC for most supported commodities. This outcome had been predicted at the CAP inception by economists such as Colin Clark [10], who had seen the guaranteed price system as the main vulnerability of the ongoing institutional building.

quotas are even less distortive than is the present system of decoupled payments (the dynamic consequences of which are in general underestimated).

1. CONCLUSIONS

The future of the European sugar chain is therefore gloomy in the short run. It will certainly be improved in the long run, when the necessity of reinstalling the quotas system, the efficiency of which is proven, will become apparent. Unfortunately, the occurrence of a deep crisis will be necessary for that to occur. But how could economists be taken seriously without crisis?

REFERENCES

1. Taussig, F.W. (1903) The end of the sugar bounties . Quaterly journal of economics **18**, N°1, : 130-134

2. Waught F.V. (1944) : Does the consumer benefits from price instability? Quaterly Journal of economics **58** (3) : 602-614.

3. Oi, W. (1961) : The desirability of price instability under perfect competition. Econometrica **29** : 58-64.

4. Massell, B.F. (1969) : Price stabilisation and welfare. Quaterly Journal of Economics **83** : 285-297.

5. Galiani, F. (1770) : Dialogue sur le commerce des bleds. Reprint, Fayard, Paris 1984.

6. Ezekiel, M. (1938) : *The Cobweb Theorem*. Quaterly Journal of Economics 53 : 225-280.

7. Boussard, J.M., 1996. When risk generates chaos. Journal of Economic Behaviour and Organization, **29** (96/05), 433-446.

8. Boussard, J.M. and M.G. Piketty (2000) : Can market support trade? The case of sugar. Paper presented to the 24th IAAE congress in Berlin.

9. Lindsey, E. K. (1934) : The Roosevelt revolution first phase. Victor Gollancz, Londres.

10. Peters, G. (2001) : Colin Clark (1905-1986), Economist and Agricultural Economist Queen Elisabeth House working paper series N° 69, University of Oxford, Oxford.