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The Commission proposal for a European Tobacco Products Directive - A critical evaluation of the Roland Berger studies

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by

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Abstract

In December 2012, the European Commission published a draft proposal for a revision of the European Tobacco Products Directive. Since then, this proposal has created significant debate fuelled partly by the economic evaluation of the Commission proposal by Roland Berger. This paper analyses the merits of the claims and criticisms voiced in that study.

Introduction

In December 2012, the European Commission published a draft proposal² for a revision of the EU Tobacco Products Directive focusing on five policy areas: (a) smokeless tobacco products and other nicotine containing products, (b) packaging and labelling, (c) ingredients and additives, (d) cross-border distance sales and (e) traceability and security features.³

Without going into the details of these five policy areas, the proposed tobacco directive of the EU ultimately aims at ensuring a high level of health protection and improving the functioning of the internal market. The former is expected to contribute to a reduction of tobacco consumption, a goal which by necessity will be diametrically opposed to the interests of the tobacco industry. The reason is very simple: It is not possible to substantially reduce tobacco consumption and maintain or even increase tobacco sales at the same time. If tobacco consumption declines as a result of the directive, this implies lower sales and thereby lower revenues and profits for the tobacco industry. This necessarily also implies that employment in the tobacco industry declines. Reductions in tobacco consumption can logically not go hand in hand with growth rates in the tobacco industry even if the industry will stand to gain from improvements in the internal market. One cannot eat the cake and have it too.

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² European Commission (2012a).

³ For an overview of Tobacco control efforts in Europe see Britton and Bogdanovica (2013).

From that perspective the main arguments presented by the tobacco industry in the study prepared by Roland Berger⁴ seem highly odd as they suggest that far from being an ineffective policy, the Commission proposal will actually reduce tobacco consumption and this is in essence what is considered the problem.

While the obvious, namely that a flourishing tobacco industry is anathema to a reduction in tobacco consumption, is maintained here, one can explore the impact that the proposed directive will have on the EU economy more generally and how potential negative impacts could be curbed without impacting the ultimate aim of reducing tobacco consumption in Europe.⁵

The Roland Berger study one-sidedly focusses on the employment and tax revenue “benefits” of the tobacco industry to the neglect of a treatment of the substantial economic losses, for example in productivity and increased health care expenditure. Even this fair-weather treatment, however, fails in several regards for example by confusing employment effects *in the sector* with *aggregate* employment effects and by restricting the analysis of taxes to tax revenues *generated in the tobacco sector*. In the following the two key claims made in the Roland Berger study are analysed in turn before the underlying “model” from which these results are “derived” is analysed.

Roland Berger predicts an annual loss of up to 8.5 billion Euros of tax revenue.

There can be no doubt that forecasting tax revenues is crucial for governments and this may imply analysing the impact of a policy in a sector of the economy that is responsible for an important part of aggregate tax revenues, not least to possibly allow EU member states to adjust the taxes levied in that sector. The excise duty, i.e. the taxes that are levied by national governments in the tobacco sector in addition to VAT are, however, not standard in the sense that they have been instituted as so-called *sin taxes*. *Sin taxes* are taxes that are devised with the aim of reducing the consumption of a particular product by rendering it more costly and thereby less attractive. The concept is closely related to the notion of externality, namely that not all (positive or negative) effects of consuming a particular product are priced in and therefore require a price adjustment.⁶ This may be done with the simple intention to curtail consumption as in the case of tobacco or, as for example in case of mineral oil, also in order to encourage the development of alternatives that only become viable under increased mineral oil prices. It is therefore an inherent feature of successful sin taxes that the revenues generated by the sin tax will decrease. In other words, a reduction in the revenue of a sin tax is a sign that the policy of discouraging consumption is working, i.e. consumption decreases.⁷ As a large portion of the tax revenues in the tobacco sector are based on sin taxes, it would be paradox to consider a decline of tax revenues as an argument against the policy as the only way that tax

⁴ The study comprises Roland Berger (2013a) and (2013b).

⁵ This is what the European Commission did in its Impact Assessment, see European Commission (2012b).

⁶ Environmental taxes or tradable permits are an example of price modifications aimed at internalizing environmental externalities.

⁷ In countries such as France the receipts of sin taxes on tobacco are earmarked for the health care system. In such countries reductions in sin tax revenue may not affect the public budget as they may be directly offset by lower health care costs. Public healthcare expenditure associated with tobacco consumption in the EU is estimated at around 25.3 billion Euros. This does not include productivity losses linked to smoking estimated at 8.3 billion Euros per annum and the life years lost due to smoking estimated to correspond to 517 billion Euros every year. See European Commission (2012b:15).

revenues are declining when tax per unit is held constant is with a decrease in demand. Of course this is no different when the proposed policy measures address other aspects such as for example packaging with the aim of reducing demand for the good as intended by the Commission proposal.

As an intermediary result we can therefore already conclude that even if the calculations made by Roland Berger were correct, such a finding could hardly be used as evidence of a flawed directive, rather to the contrary, reductions in tax revenues in the tobacco sector will generally indicate a successful policy as they will be due to reductions in consumption.⁸

Consider now the question whether reductions in tax revenue in a particular sector allows a conclusion as to the *overall* tax revenue situation for a government. While this is implied by the Roland Berger study who in fact does not distinguish between reductions in tax revenue *in the tobacco sector* and the necessarily corresponding increases of tax revenue *in other sectors*, this is an important question. Governments will generally care about the magnitude of *total* tax revenue much more than changes in tax revenues in individual sectors of the economy.

Overall tax revenues may or may not decrease if tax revenues decrease in any particular sector. If per unit taxes in any particular sector do not increase, but quantities of products sold decrease, tax revenues generated in that sector will decline. If EU member states, however, increase per unit taxes in anticipation or in the aftermath of the implementation of the directive, tax revenues in the tobacco industry may remain the same or may even increase. Even if taxes per tobacco product remain the same and quantities sold decline, implying a reduction in tax revenue generated in this sector, this is not the end of the story from a general tax revenue perspective. Clearly if less tobacco products are bought as a result of the directive, consumers will have more money available to spend on other products. As the other products and services that are now consumed are also taxed, the impact on overall tax revenues is much lower than a focalization on tax revenue generated by tobacco products alone would suggest.⁹ In other words, the required per unit tax increase required to hold overall tax revenue constant is relatively small.

In summary, the estimates of Roland Berger are fundamentally flawed as they do not acknowledge the difference between tax revenues in any particular sector of the economy and overall effects on tax revenue. The authors assume that if money (purchasing power) is not spent on tobacco products it is simply withdrawn from the economy without leaving any trace. It will, however, be spent on other products and services thereby generating tax revenue, which implies that the measures are at the very least VAT neutral. Furthermore, even a study that would properly take this distinction into account and would not allow purchasing power to magically vanish could hardly be convincing as the whole purpose of the directive is the reduction in consumption of a product on which excise duties, that is *sin taxes* are levied. This implies that unless the excise duty is increased, tax revenues will *necessarily* decline *in that sector* if consumption decreases. This is the whole point of successful sin taxes and the Commission proposal to begin with. Revenues generated by sin taxes are not central, they are a welcome by-product.

⁸ Of course reductions in tax revenue may also be due to counterfeit tobacco products etc.

⁹ There is no reason to believe that the directive will impact the propensity to consume or save in the economy. As a result the measures must at the very least be VAT neutral as the Commission has rightly pointed out.

Roland Berger's predictions concerning employment effects.

These claims are based on two distinct effects. First of all, the study argues that the decline in consumption or value added due to reduced product differentiation leads to direct job losses in the tobacco industry. The second effect is due to the reduction of tax revenue postulated that in turn is supposed to lead to a reduction in employment.

By proceeding in this fashion, the study confuses employment effects *within the tobacco industry* with *aggregate* employment effects in the EU and also misunderstands the impact of changes in tax revenue on aggregate employment.

While it is legitimate to consider the effects of a particular policy on employment in a particular industry or sector as this is linked to the need to downsize and restructure the industry and therefore requires decisions on the level of the firm, it is economically unsound to link any particular policy that leads to structural adjustments to increases or decreases in aggregate employment. The simple reason for this is that less money spent in a particular sector will imply less jobs in that sector but also more money spent in another sector of the economy, implying more jobs in that sector. Structural changes implying such shifts in employment are a fundamental feature of successful innovation, economic development and progress. If employment effects in any particular sector of the economy could be considered an argument in favour or against any particular public policy, one would have had to prohibit the development of the automobile as this certainly led to a drastic decrease in employment in the horse carriage business.

As an intermediary result, it should be clear that employment effects *in any particular sector* of the economy cannot hold any sway in public policy decisions.¹⁰ Furthermore, such negative employment effects will typically be counterbalanced by positive effects in other sectors of the economy, namely those sectors where the purchasing power that is withdrawn from the tobacco sector now becomes effective. While employment effects in any particular sector will tend to be counterbalanced by employment increases in other sectors, and while, more importantly, even net effects can generally not be considered a relevant argument in the evaluation of a policy, it remains possible to get an idea of the marginal effects that may arise on the aggregate level. A clue to determine such residual effects is the capital intensity of the industry, or, in other words the productivity. As the tobacco industry is relatively capital intensive, a shift of spending from that industry to other, relatively more labour intensive industries indicates a positive sign of the residual employment effects.¹¹

As to the second argument concerning the negative employment effects of the postulated tax revenue decrease, the error in the reasoning of the authors of the study is even more flagrant. As

¹⁰ This is something that apparently also the European Commission has not understood as it requires the analysis of employment effects in its impact assessment framework. As a result it is not surprising that it thereby unnecessarily lends credibility to such contorted lines of reasoning.

¹¹ Note that even positive (negative) net aggregate employment effects cannot be an argument in favor of (against) a particular policy. While employment effects are irrelevant for structural policies, the same applies also to the tempting but incorrect conclusion that employment problems may be overcome by introducing policies that lead to shifts from capital intensive to labor intensive industries. Any policy that reduces productivity such as for example a policy prohibiting tractors and forcing farmers to manually plow their fields clearly increases aggregate employment but would economically be very damaging as in the end real income would fall.

purchasing power does not simply evaporate, it should be clear that any amount that the government does not collect in terms of taxes, remains with private households, who are of course free to spend that money. While it is possible to engage in complex discussions under what conditions government spending results in a higher multiplier than private spending, it is clear that it is simply false to pretend that the postulated reductions in tax revenue are not at least partially compensated by corresponding higher private spending.¹²

In summary, even if the calculations presented by Roland Berger were not flawed, did not forget that lower government income is necessarily associated with higher private income and did not confuse employment effects on a sector level with aggregate employment effects, such effects would nevertheless have to be considered as irrelevant in a context of sector policies.¹³

As has been shown above, the two key tenets advanced in the study prepared by Roland Berger, namely effects on employment in the tobacco sector and impact on tax revenues, are irrelevant even if the calculations had been properly made. What remains of the study is the so-called model from which the estimates are “derived”. While Roland Berger provides insufficient information to fully evaluate the model it may be useful to shed some light on some of the elements that lead the authors to reach their conclusions.

How to set up a proper model and what Roland Berger actually did

A scientifically accepted way to model the measures proposed by the Commission would be to start with a differentiated products oligopoly model where all four big producers of tobacco products are modelled selling their brand products on the three segments identified, i.e. premium, below premium and fine-cut, in the respective relevant market(s). The supply of illegal tobacco products would need to be included in that model as such products exert a pricing constraint on the other firms. The demand side could be modelled by estimating a demand system, e.g. by employing a nested logit model. Based on such a theoretical model one could calibrate the differentiation parameters, both between products offered by different firms within one segment and between products of different segments and other relevant parameters such as production cost in a way that would allow the model to properly “predict” the developments in the tobacco industry in a suitable past period where data is available.¹⁴ Based on such a calibrated model it would then be possible to make predictions as to the impact of the proposed changes on the supply and demand side of this industry in the future.

Only in such a framework is it possible to meaningfully discuss repercussions on price of a decreased differentiation of products under different demand estimates. Such an approach would allow

¹² Arguments in favor of the claim that private spending may be more significant could be the fact that smoking is a low income phenomenon, implying a higher income share of consumption, whereas government expenditure may be focusing on debt reduction or servicing the debt, i.e. paying out money to typically high-income earners.

¹³ Exceptions are of course important structural adjustments for instance resulting from the abrupt withdrawal of important government subsidies in otherwise non-competitive industries. In such cases employment effects in the sector may have important repercussion in certain regions rendering adjustment programs and transitory measures socially important.

¹⁴ An even superior approach would take a subset of past data to calibrate the model and test the accuracy of the model on the remaining set of data before proceeding to predictions.

predictions concerning prices, the market share of illegal tobacco products but also the magnitude of switching between product segments. Of course such an approach has high data requirements and may therefore not always be feasible, requiring a more humble approach on the basis of the data that is available.

What the study does, however, is very different. The authors do not model different products within a segment and thereby do not model competition between firms at all, instead they directly jump to elasticities and cross-price elasticities, i.e. the parameters that determine demand effects within a segment and substitution behaviour between segments as a function of price. The own-price elasticities of the legal segments (in this case the own-price elasticity indicates how demand for the products in the different legal segments changes with a 1% change in price) just as the overall elasticity of demand for legal products are taken from national studies, essentially a UK and a Dutch study and extrapolated to the European level.¹⁵ The own-price elasticity of the illegal segment is set without any justification and the cross-price elasticities are again based on an empirical study estimating these values based on UK data. In order to generate the different scenarios, the authors then proceed to modify these elasticities *ad hoc*. For instance own-price elasticities are increased between 1 and 5% based on the hunch that product differentiation decreases. Similarly the cross price elasticity between the legal and illegal segments is simply assumed to increase by 30%.¹⁶

It is noteworthy that these decisive parameters are not derived from a model that would describe the interaction between competing firms offering products on the different segments on the supply side and a calibrated demand system but simply appear in the text without any justification. Probably surprised at their own boldness, the authors reassure the reader that “all values are still broadly consistent with the values that can be found in the literature. We therefore consider our predicted outcomes very realistic, even in the Elevated Scenario”.¹⁷

This is an astonishing feat. Indeed, drawing on a total of three empirical studies¹⁸ with national scope, one of which has been identified as having too elevated predictions¹⁹, and modifying the findings there, the Roland Berger study constructs an EU wide demand system that ultimately just falls short of simply *assuming* the key “findings” directly. Clearly, *ad hoc* assumptions concerning the cross-price elasticity between the legal and illegal segment together with assumptions concerning

¹⁵ It should be noted that the problem may lie in both, the fact that specific national markets may not be representative, a problem that was not considered by Roland Berger, and that the estimated elasticities are predictions that apply to the specific context within which they were estimated. As a result, such elasticities are at best a starting point but cannot substitute for a more dynamic model of demand development. To take an extreme example to make the point: The prohibition of menthol cigarettes may result in an increase of black market sales of menthol cigarettes in the short run but in the medium to long term it is rather likely that consumers will forget that such products even existed.

¹⁶ In contrast to other statements in the study, where price decreases in the legal segments are supposed to result in a growing black market, the authors note: “The least conservative estimate assumes that under the new TPD, a decrease in the price of premium cigarettes decreases the demand for illicit cigarettes by 13%.” (Roland Berger (2013a:36)).

¹⁷ Roland Berger (2013a:36).

¹⁸ These studies are Cullum and Pissarides (2004), Mindell and Whynes (2000) and Ngyuen *et al.* (2012).

¹⁹ See Collis *et al.* (2010), who doubt the magnitude of the findings in Cullum and Pissarides (2004).

increases in the own-price elasticities of the segments drive the predictions.²⁰ Both, the fact that these assumptions are the main driver of the “results” and the complete absence of justification of these parameter choices, speaks for itself.

On an intuitive level it seems plausible enough that a prohibition of certain additives and types of cigarettes such as “slim” cigarettes (but not so much the packaging as claimed in the study²¹) reduces product differentiation. Whether this then increases price competition or not is unclear as it is not modelled but only assumed. Furthermore, even if price competition within each segment intensifies, it is not clear whether that triggers switching across segments and even less so whether this would trigger switching towards lower segments. Indeed, it may well be that price decreases in the premium product segment lead to switching into that segment from the below-premium, the fine-cut or even the illegal segment. While standard product differentiation models would predict more intense price competition, they are normally based on an exogenously given amount of firms in the market and therefore do not take into account the fact that with advertisement effectively banned, market entry barriers increase and thereby cement market shares, an effect that will work in the opposite direction and will tend to soften price competition. Which effect prevails is unclear and could only be discussed in the context of a proper model.

That the posited lower prices for legal tobacco products in turn also trigger an expansion of the black market, as claimed by Roland Berger, seems nonsensical and is probably an artefact of introducing two contradictory assumptions into the demand system as discussed above (namely that prices in legal segments decline and that substantial consumer segment switching to the black market occurs). If anything, the black market relies on high tobacco prices not on low ones and this has been the argument presented by the industry against higher taxes for years. In addition, the Commission proposal includes proposals for measures against illegal tobacco trade that remain unmentioned in the Roland Berger study but would also rather tend towards a declining role of the black market.

As the packaging proposal together with the prohibition of certain substances and types of cigarettes not only reduces product differentiation possibly entailing lower prices, but also discourages smoking, the pressure on price may not be sufficient to counter the reduction in demand.²² This is even more so as the part of the retail price that is influenced by the tobacco industry is relatively small compared to the sin tax levied so that even important price reductions due to reduced product

²⁰ In addition to making no apparent effort in estimating elasticities, Roland Berger also never bothered to test their choices for plausibility. With access to firm level data it would have been easy to calculate gross margins for the respective segments. If the price of cigarettes in a particular segment is p and the cost per unit are c , the gross margin is given by $M = \frac{p-c}{p}$, also called the Lerner Index. A look at any introductory microeconomics textbook would have demonstrated that a profit maximizing firm will always set its price so that the gross margin is inversely related to the own-price elasticity of demand, i.e. $M = \frac{1}{\varepsilon}$, where ε denotes the own-price elasticity. An estimate of gross margins could have functioned as a reality check.

²¹ Consumer surveys indicate that taste is the number one criteria for product choice followed by brand name. Intuitively it seems rather logical that packaging, while found to be an effective way of discouraging consumption of tobacco products, does not influence product choice as much as taste.

²² This is indeed the main finding of all the academic evidence cited by Roland Berger in order to justify the assumption of increased product homogenization. See for example Scheffels and Saebo (2013) and Thrasher *et al.* (2011).

differentiation within product segments are unlikely to entail large percentage changes of retail prices.²³

As in the absence of a proper model effects are unclear, EU member states should envision increases in the excise duty (i.e. the per-unit tax or *specific tax* as it is called in the study) in order to counter any potential demand expansion (and a potential decline in tax revenues). Such a tax measure would in any case be an appropriate flanking measure in line with the Commission proposal.

²³ Consider for instance a decrease in the retail price of 1%. In order to achieve such a decrease under the assumption that 70% of the retail price is based on per unit sin taxes, the reduction in product differentiation would need to entail a price decrease *ex-factory* of above 3%, i.e. $\frac{100}{100-70} \cong 3.34\%$.

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