It is worth noting that my new bounds on the quantile of the effects of smoking are much tighter for SCCG women, compared to the entire sample and other subsamples. For $q \leq 0.5$, the refinement rate ranges from 51% to 64% compared to Makarov bounds. For SCCG women, my new sharp bounds on the median are $[0, 299]$ grams, while Makarov bounds on the median are $[0, 764]$ grams. The higher identification gains result from relatively heavier potential nonsmokers' infant birth weight, which leads to the shorter distance between two potential outcomes distributions as reported in Table 5. Note that the shorter distance between marginal distributions of potential outcomes improves both my new lower bound and the Makarov lower bound.[22]

Table 7: QTE and bounds on the quantiles of smoking effects

Dep. var.= Birth weight (grams)		$Q_{0.15}$	$Q_{0.25}$	$Q_{0.5}$	$Q_{0.75}$	$Q_{0.85}$
Entire Sample	QTE	195	214	234	259	292
	Makarov	[0,405]	[0,524]	[0,843]	[0,1317]	[80,1634]
	New	[0,265]	[0,304]	[0,457]	[0,882]	[80,1204]
White	QTE	204	212	212	227	255
	Makarov	[0,383]	[0,505]	[0,833]	[0,1274]	[65,1588]
	New	[0,265]	[0,308]	[0,450]	[0,891]	[65,1239]
SCCG	QTE	109	165	187	244	194
	Makarov	[0,311]	[0,428]	[0,764]	[0,1183]	[69,1453]
	New	[0,114]	[0,193]	[0,299]	[0,579]	[69,792]
Age 26-35	QTE	233	180	179	262	283
	Makarov	[0,336]	[0,458]	[0,807]	[0,1324]	[79,1621]
	New	[0,239]	[0,276]	[0,406]	[0,746]	[79,1204]

Although QTE is placed within the identification region for $q = 0.15$ to 0.85 and for all groups, at $q = 0.15$, QTE is very close to the upper bound on the quantile of smoking effects for SCCG and age 26-35 subgroups. Furthermore, at $q = 0.10$, QTE is placed outside of the improved identification region for SCCG group and age 26-35. This implies that QTE is not identical to the quantile of treatment effects in my example and so one should not interpret the value of QTE as a quantile of smoking effects.

[22] To develop intuition, recall Figure 7(c). The size of the lower bound on each triangle's probability is related to the distance between marginal distribution functions of Y_0 and Y_1. To see this, consider two marginal distribution functions F_1^A and F_1^B of Y_1 with $F_1^A(y) \leq F_1^B(y)$ for all $y \in \mathbb{R}$ and fix the marginal distribution F_0 of Y_0 where (Y_0, Y_1) satisfies MTR. Since MTR implies stochastic dominance of Y_1 over Y_0 for each $y \in \mathbb{R}, F_1^A(y) < F_1^B(y) \leq F_0(y)$ .Thus,

$$\max\left\{F_1^A(y) - F_0(y-\delta), 0\right\} < \max\left\{F_1^B(y) - F_0(y-\delta), 0\right\}.$$

Since the probability lower bound on the triangle is written as $\max\{F_1(y) - F_0(y-\delta)\}$ for some $y \in \mathbb{R}$, the above inequality shows that the closer marginal distributions F_0 and F_1 generates higher probability lower bound on each triangle.