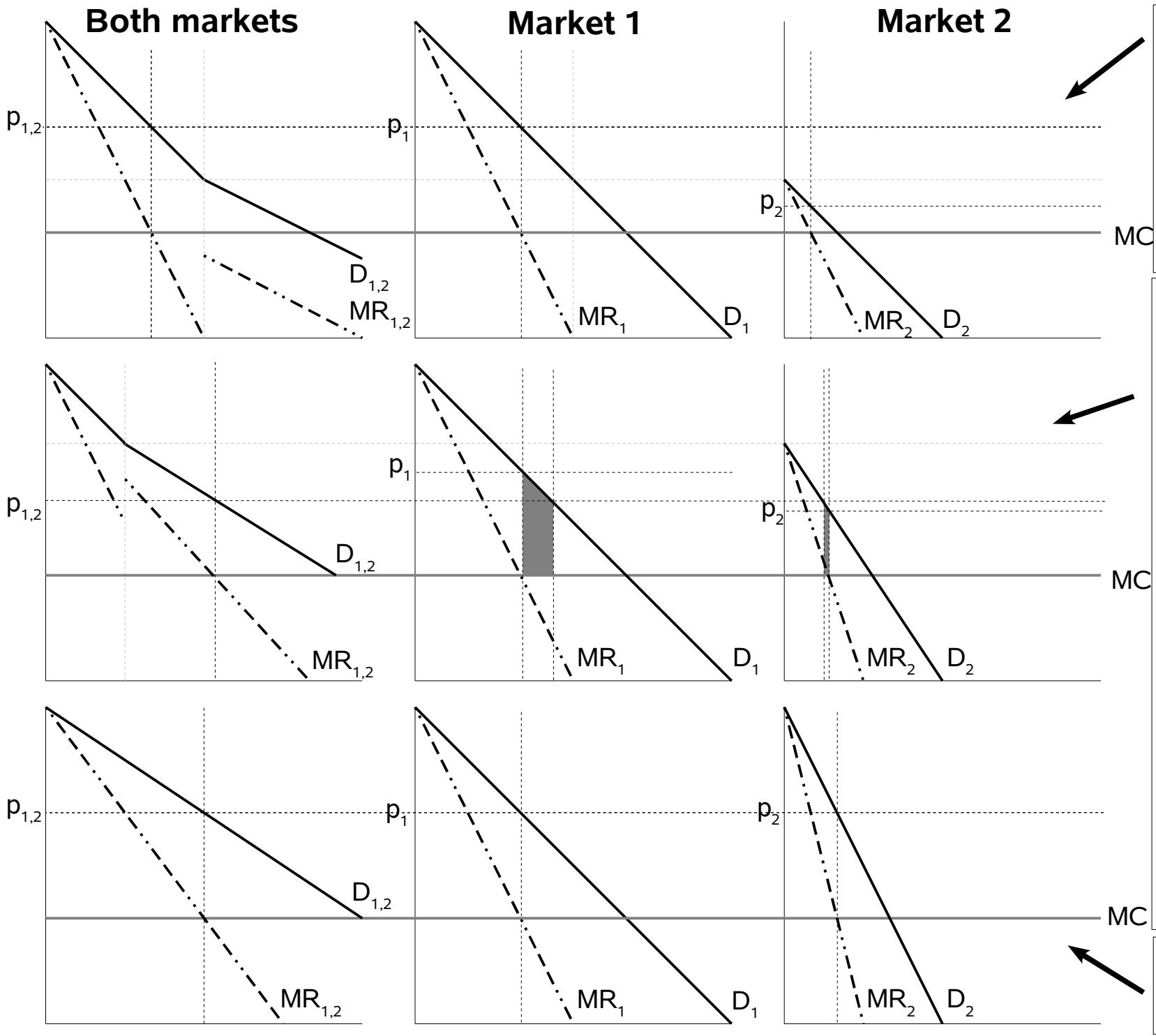

Here, the monopolist does not sell anything to market 2 pre-3rd degree price discrimination. If price discrimination is permitted, it will charge the lower price p_2 to market 2 and leave the market 1 price unchanged. So, allowing price discrimination makes the market 2 consumers and the monopolist better off and does not harm the market 1 consumers. It is therefore a Pareto-gain.

In this second example the monopolist initially sets the price $p_{1,2}$ which allows individuals from both markets to purchase some of the good. Once third degree price discrimination is permitted, the monopolist jacks up the price in market 1 from $p_{1,2}$ to p_1. The price to in market 2 is slightly reduced to p_2. In this case, we can see that the deadweight loss in market 1 increases (by the size of the large shaded trapezium) by significantly more than the slight reduction in the deadweight loss in market 2. So, the overall deadweight loss increases. Allowing 3rd degree price discrimination in this case therefore increases the monopolist's power to distort the market by enabling them to exploit the willingness to pay of the market 1 consumers. In the more general case, we can be sure that if, after 3rd degree price discrimination is introduced, the output goes down, total surplus *must* be reduced because not only does the monopolist make higher profits at the expense of CS by underproducing, but the loss of allocative efficiency also reduces CS.

Finally, in the third example, we see a case where allowing the monopolist to engage in 3rd degree price discrimination makes no difference.