$$\sum_{\ell=4}^{\infty} 2^{\ell s_1 q} \left(\sum_{k=0}^{\ell-4} 2^{-N\tilde{p}\ell} 2^{k\tilde{p}[(1-\rho)([2n/r]+1)+m+\rho N]} \left\| \mathcal{M}_r(\widetilde{\varphi}_k(D)f)\mathcal{M}_r(\widetilde{\Phi}_k(D)g) \right\|_{L^p}^{\tilde{p}} \right)^{\frac{q}{\tilde{p}}}$$

$$\lesssim \sum_{k=0}^{\infty} 2^{kq[(1-\rho)([2n/r]+1-N)+m+s_1+\varepsilon]} \left\| \mathcal{M}_r(\widetilde{\varphi}_k(D)f)\mathcal{M}_r(\widetilde{\Phi}_k(D)g) \right\|_{L^p}^{q}. \qquad (0.1)$$