$$(B,C) \qquad\qquad F(B,C) \xrightarrow{\eta_{(B,C)}} G(B,C)$$

$$\downarrow (f,g) \qquad F(f,g) \downarrow \qquad\qquad \downarrow G(f,g)$$

$$(B',C') \qquad\qquad F(B',C') \xrightarrow{\eta_{(B',C')}} G(B',C')$$