

$$\begin{array}{ccc}
 (B, C) & & F(B, C) \xrightarrow{\eta_{(B, C)}} G(B, C) \\
 \downarrow (f, g) & & \downarrow F(f, g) \qquad \qquad \downarrow G(f, g) \\
 (B', C') & & F(B', C') \xrightarrow{\eta_{(B', C')}} G(B', C')
 \end{array}$$