

$$\begin{array}{ccc}
 (A, B) & \xleftarrow{\varepsilon_{(A, B)}} & (G(A, B), G(A, B)) \\
 & \swarrow f & \uparrow (g', g') \\
 & & (C, D)
 \end{array}$$

$$\begin{array}{ccc}
 (A, B) & \xleftarrow{(\pi_A, \pi_B)} & (A \times B, A \times B) \\
 & \swarrow f & \uparrow (f', f') \\
 & & (C, D)
 \end{array}$$