

$$\begin{array}{ccccc}
M_s \times_C M & \xrightarrow{\omega} & M_t \times_C M & \xrightarrow{F_M \times F_M} & M'_{t'} \times_{C'} M' \\
\Downarrow & & \Downarrow & & \Downarrow \\
(g, f) & \longmapsto & (f, g) & \longmapsto & (F_M(f), F_M(g)) = (f_*, g_*)
\end{array}$$