$$
\begin{tikzcd}
E_2 \arrow[r] \arrow[d, "\Phi_2"] & E_1 \arrow[r] \arrow[d, "\Phi_1"] & E_0 \arrow[r] \arrow[d, "\Phi_0"] \arrow[dd, bend left, "\mathrm{id}"'] & M \arrow[r] \arrow[d, "\mathrm{id}"] & 0 \\
E_2' \arrow[r] \arrow[d, "P_2"] & E_1' \arrow[r] \arrow[d, "P_1"] & E_0' \arrow[r] \arrow[d, "P_0"] & M \arrow[r] \arrow[d, "\mathrm{id}"] & 0 \\
E_2 \arrow[r] & E_1 \arrow[r] & E_0 \arrow[r] & M \arrow[r] & 0
\end{tikzcd}
$$

$$
\begin{tikzcd}
\mathrm{Ext}_{\mathfrak{o}}^n(M, N) \arrow[r, "\Phi^*"] \arrow[rr, bend right, "\mathrm{id}^*"'] & \mathrm{Ext}_{\mathfrak{o}}'^n(M, N) \arrow[r, "P^*"] & \mathrm{Ext}_{\mathfrak{o}}^n(M, N)
\end{tikzcd}
$$

By 3, $(P \circ \Phi)^* = \mathrm{id}^*$, since clearly
$\Phi^* \circ P^*$

$$
\begin{tikzcd}
E_2 \arrow[r] \arrow[d, "\mathrm{id}"] & E_1 \arrow[r] \arrow[d, "\mathrm{id}"] & E_0 \arrow[r] \arrow[d, "\mathrm{id}"] & M \arrow[r] \arrow[d, "\mathrm{id}"] & 0 \\
E_2 \arrow[r] & E_1 \arrow[r] & E_0 \arrow[r] & M \arrow[r] & 0
\end{tikzcd}
.
$$

$\Rightarrow$ Similarly, $(\Phi \circ P)^* = \mathrm{id}^* = P^* \circ \Phi^*$

$\Rightarrow$ Φ^* is isomorphic $\Rightarrow$ $\mathrm{Ext}_{\mathfrak{o}}^n(M, N) \xrightarrow[\cong]{\Phi^*} \mathrm{Ext}_{\mathfrak{o}}'^n(M, N)$

This proves that Ext is well-defined independently of the projective resolution $E.(M)$. We can prove similarly

$$
\begin{tikzcd}
\mathrm{Ext}_{\mathfrak{o}}^n(M, N'') \arrow[r] \arrow[rr, bend right] & \mathrm{Ext}_{\mathfrak{o}}^n(M, N') \arrow[r] & \mathrm{Ext}_{\mathfrak{o}}^n(M, N)
\end{tikzcd}
$$

Next, we note that the definitions of Ext and Tor are not symmetric in M and N. For Tor this may be rectified as follows: Take projective resolutions $E.(M)$