Let $\Gamma$ be a finite group, and $V$ be an absolutely irreducible $\mathbb{F}_p\Gamma$-module. By Mazur, $V$ has a universal deformation ring $R(\Gamma, V)$. This ring is characterized by the property that the isomorphism class of every lift of $V$ over a complete local commutative Noetherian ring $R$ with residue field $\mathbb{F}_p$ arises from a unique local ring homomorphism $\alpha : R(\Gamma, V) \to R$. The structure of $R(\Gamma, V)$ is closely related to the cohomology groups $H^i(\Gamma, \text{Hom}_{\mathbb{F}_p}(V, V))$ for $i = 1, 2$. In this talk, we consider the case when $\Gamma$ is an extension of a group $G$ with order relatively prime to $p$, by an elementary abelian $p$-group $N$. We discuss $H^i(\Gamma, \text{Hom}_{\mathbb{F}_p}(V, V))$ for $i = 1, 2$ and the extent to which $R(\Gamma, V)$ can see the fusion of $N$ in $\Gamma$. (Received September 16, 2013)