Composites of central extensions determine a relative semi-abelian category structure II

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We consider trivial and central extensions, in the sense of G. Janelidze and G. M. Kelly, defined with respect to the adjunction between a Barr-exact category $\mathbf{C}$ and a Birkhoff subcategory $\mathbf{X}$ of $\mathbf{C}$ [1]. We prove that if $\mathbf{C}$ is a pointed exact Mal'tsev category with cokernels and $\mathbf{X}$ is protomodular, then: (a) the trivial extensions and the composites of central extensions determine a relative homological category structure on $\mathbf{C}$ [2]; (b) if, in addition, $\mathbf{C}$ has coproducts, then the composites of central extensions determine a relative semi-abelian category structure on $\mathbf{C}$ [3]. We explain how these results extend those of [4] and [5].

REFERENCES

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