In biochemistry, the amount of the ligand that gets attached to macromolecule is often well described by an empirical formula with an empirical parameter \( n \); this formula is called Hill's equation. In this talk, we provide a theoretical derivation of this formula from the generalized equations of chemical kinetics. In the traditional chemical kinetics equations, the reaction rate is proportional to the product of the concentrations \( [c] \) of all the components \( c \). For example, for the reaction \( A + B \rightarrow C \), the rate is proportional to the product \( [A][B] \); for the reaction \( 2A + B \rightarrow C \), the rate is proportional to \( [A][A][B] \), etc. These formulas explain specific cases of Hill's equation, corresponding to the case when \( n \) is an integer. To describe the general case, we assume a more general dependence \( f([A],[B]) \) of the rate on the component concentrations. The numerical description of this dependence depends on the units that we use to describe the concentrations \( [A] \) and \( [B] \). We make a natural assumption that this dependence is scale-invariant, in the sense that if we change units for measuring the concentrations \( [A] \) and \( [B] \), the formula remains the same if we appropriately change the unit for measuring the rate. We show that this assumption leads to an explicit formula for the generalized chemical kinetics which, in turn, leads to an expression for the amount of the attached ligand, an expression that includes the Hill's equation as an important specific case. Thus, we get the desired theoretical derivation of the empirical Hill's equation.