1.2 GeV appearing to be favored by data in this framework; momentum space widths used in parametrizations of constituent-quark–diquark Faddeev wave functions, $\Lambda_{0^+} = 1.0\,\text{GeV}$ and $\Lambda_{1^+} = 1.2\,\text{GeV}$, and exponents for these vertex functions, $n_{0^+} = 2.0$ and $n_{1^+} = 3.5$, chosen to guarantee Eq. (VI.5); a hard-cutoff-scale for the constituent-quark–pion vertex, $\Lambda_{Q\pi} \sim 1.0\,\text{GeV}$; and a power-law form factor to model the p^2- and k^2-dependence of the Regge exchange quark-quark scattering amplitude, which is defined by a mass-scale, $\Lambda_R = 0.25\,\text{GeV}$, and a power, $n_R = 4$.

Combining these ingredients, the valence-quark distribution functions are computed at $Q_0 = 1\,\text{GeV}$ from the sum

$$q_v(x;Q_0) = Z_q(Q_0)\{q_{\mathcal{A}}(x) + q_{\mathcal{B}}(x) - \bar{q}_{\mathcal{B}}(x) + q_{\mathcal{C}}(x) - \bar{q}_{\mathcal{C}}(x)\}\,,\; q = u, d\,, \tag{VI.17}$$

with the normalization constants fixed by Eqs. (II.27) subject to the additional constraints $\int dx\, u_{\mathcal{A}}(x) = 2$, $\int dx\, d_{\mathcal{A}}(x) = 1$. The relative normalizations of the contributions in Fig. VI.29 are determined once the model's parameters are fixed; i.e., they are not additional independent quantities. Hence, in this model, defined at $Q_0 = 1\,\text{GeV}$, the total valence-quark normalization is constituted from the diagrams in Fig. VI.29 as follows:

$$\int_0^1 dx\,\{u_v(x;Q_0) + d_v(x;Q_0)\} = \mathcal{A}(56\%) + \mathcal{B}(16\%) + \mathcal{C}(28\%)\,. \tag{VI.18}$$

Moreover,

$$\int_0^1 dx\, x\,\{u_v(x;Q_0) + d_v(x;Q_0)\} = \mathcal{A}(41\%) + \mathcal{B}(6\%) + \mathcal{C}(0.06\%) = 0.47\,, \tag{VI.19}$$

which leaves 53% of the proton's momentum to be carried by non-valence-quark degrees-of-freedom.

Figure VI.30 depicts features of the model's distribution functions. Although the sector-$\mathcal{A}$ contribution is always dominant on the valence-quark domain, it is evident from the *left panel* that the renormalization effected by adding the sector-$\mathcal{B}$ and -$\mathcal{C}$ contributions plays an important part within the model: it is a surrogate for evolution, shifting support to lower x at the model's mass-scale of $Q_0 = 1\,\text{GeV}$. The *right panel* exhibits that behavior for the valence-quark flavor-ratio which is typically identified with diquark models: $d_v(x)/u_v(x)$ decreases monotonically with increasing x. The ratio plotted is formed only from the sector-$\mathcal{A}$ contributions. On the valence-quark domain the full result may be estimated by multiplying the value plotted in Fig. VI.30 by the ratio of normalization constants; namely, $Z_d/Z_u \approx 2/3$.