Inefficient Basic Science

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This paper reconsiders the claim of Bloom et al. (2020) that "ideas are getting harder to find." Standard growth accounting implies that constant total factor productivity (TFP) growth requires the growth rate of ideas to remain constant. Bloom et al. (2020) argue that because measured research effort has expanded dramatically while TFP growth is unchanged, the productivity of research must have declined. I investigate the plausibility of the alternative hypothesis: that ideas are not getting harder to find, and that effective research inputs have in fact remained roughly constant.

I first examine the construction of Bloom et al. (2020) measure of research inputs. Their use of R&D expenditures deflated by high-skilled wages likely overstates growth in research effort, both because it emphasizes private applied R&D (with weaker spillovers to TFP than basic research) and because rising skill premia bias the deflator. Drawing on critiques by Ekerdt and Wu (2024), I show that once these issues are accounted for, the increase in research effort since 1930 is far smaller than the 25-fold rise Bloom et al. (2020) report.

Building on this, I propose two mechanisms that could explain why effective research effort may be closer to constant. First, inefficiencies in the allocation between basic and applied research may have reduced the productivity of marginal applied research, requiring a higher research effort to sustain TFP growth. Second, growing wage divergence between academia and other elite occupations implies negative selection into research: the most talented potential researchers increasingly pursue private-sector careers, leaving effective research effort stagnant despite rising headcounts. This effect complements the attenuation emphasized by Ekerdt and Wu (2024).

Taken together, these two effects suggest that the observed constancy of TFP growth does not necessarily imply that ideas are inherently harder to find. Instead, institutional and market forces may have driven a misallocation of research inputs and negative selection in who enters research, keeping effective research capacity effectively flat. Therefore, long-run growth may be sustained even without growth in research inputs, provided institutions and incentives allow effective research capacity to remain constant.

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References

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