Studies in Philosophy Politics and Economics

Pavan Rao (2020) *A Defence of Industry Funding: Why Banning Private Sponsorship of Scientific Research Is a Bad Idea*, Studies in Philosophy, Politics and Economics, 2(1), 50-54

A Defence of Industry Funding: Why Banning Private Sponsorship of Scientific Research Is a Bad Idea

Pavan Rao*

* Philosophy, Logic and Scientific Method, London School of Economics, Houghton Street, London, WC2A 2AE, UK. Email: p.s.rao@lse.ac.uk. URL: www.linkedin.com/in/pavan-rao-10a711143

Abstract

I aim to offer a grounded judgment on whether industry funding of scientific research should be banned. I consider what I believe to be the most pertinent challenges to industry funding as well as reasons why industry funding of scientific research can be advantageous. To facilitate a meaningful response to the question of banning, I reduce the challenges to industry funding to perhaps the greatest concern among detractors: scientific fraud. I then weigh this against the consequences of a counterfactual world in which industry funding does not exist. Using this comparison, I conclude that industry funding should not be banned.

Keywords: Industry Funding; Scientific Research

This essay aims to answer the question of whether we should ban industry funding of scientific research. I first consider what I believe are the most persuasive arguments against industry funding of scientific research. Thereafter, I outline the strongest arguments in its favour. Having considered these merits and costs of industry funding, I offer a counterfactual discussion in which I reduce the costs to a core issue: scientific fraud. I then weigh this up against what would result from hypothetically banning industry funding. I also consider the idea of incentives within science, utilising Bright (2016), to strengthen this discussion. Ultimately, this enables me to conclude that we should not ban industry funding because it offers considerable advantages, and banning it would not necessarily completely eliminate the key disadvantages associated with its existence anyway.

One convincing argument against industry funding of scientific research concerns the issue of researchers being beholden to corporate sponsors and committing scientific fraud. If the corporate entity funding the research has a particular agenda, and the researcher's livelihood depends on the sponsor, the researcher might do everything possible to further that agenda. This can lead to dubious practices like framing results in a way more conducive to the sponsor's agenda. However, fraud can arise through less obvious channels. When a corporate sponsor becomes attached to a project, it is not necessarily the case that researchers commit fraud by manipulating the results, but rather, the sponsor sets up the

LSE Houghton St Press

project to follow a particular direction; they might select the research question, studies, and experimental design that will likely provide the answer they want (McCluskey 2017). The issue might, therefore, be understated; it is often forgotten how involved the sponsor is in the actual science, and not just its funding. Corporate involvement often encroaches into the methodological setup of research projects. For example, in medical trials testing a particular drug, sponsors can ensure that relatively healthy subjects participate or specific dosages are employed to induce particular results (Chopra 2003). Such confounding factors will necessarily distort the pure effect of the drug. Corporate sponsors might do this to fabricate evidence to help market the alleged efficacy of their product.

Secondly, whether manipulation takes place or not, there exists another concern: public perception. Financial involvement from private sector interests might not constitute wrongdoing, and sponsors might even leave the science untouched. However, this does not negate the danger of losing public trust in the integrity of the research (DuVal 2005); it is plausible that the mere involvement of 'non-academic', private entities, operating for monetary gain, is cause for concern. Studies surveying public perception of industry-funded research show that including a corporate entity in a scientific partnership decreases perceived legitimacy of the project as a whole due to potential detriment to procedural fairness (Besley et al. 2017). Once perception is tainted, observers might turn away from any output of the research in question, even if it is scientifically unadulterated. Honest research supported by corporates might be distrusted by the public or other scientists purely on account of the corporate's involvement and nothing else. Consequently, instances of corporate-backed research which might actually lead to significant benefit may not become commercially viable because of this issue. A hypothetical example is study into potentially lifesaving drugs funded by a private pharmaceuticals company. This might be because retailers or academics may hesitate to support the product of potentially disreputable work.

I now highlight arguments in favour of industry funding. Firstly, research in many important fields is vastly expensive, given the required specialist resources. Within pharmaceuticals, for example, the estimated cost of bringing a new drug to market is 2.6 billion dollars (Sullivan 2019).

Within scientific research, we can consider both 'basic research' (collating foundational theoretical knowledge upon which applied work can follow) and development of a marketable end product. Evidence suggests that governments often only fund the basic components, and it is left to industry to contribute to the enormous requirements of costlier developmental work (Chopra 2003). Indeed, in 2015 in the US, almost 65% of total spending on all science research and development was on advanced development work, nearly all of which was industry-funded (Mervis 2017). Furthering the concern of insufficient government funding, more evidence from the US shows that even basic research funding has seen declining shares of government contributions, from over 70% in the 1970's to less than 50% in the 2010's (Mervis 2017). This seems to indicate that, while the total value of basic research funding may have risen, much of this is on account of industry funding (indeed, private funding of basic research in the US nearly doubled just between 2008 and 2014 (Mervis 2017)), with government funding stagnating. Put simply then, it is possible that much of the work that goes into capitalising on research in valuable practical realisations might not actually take place without industry funding.

Secondly, industry funding can affect positive social impact through inducing greater productivity in those areas which benefit consumers directly, like medical innovations. Indeed, roughly 20% of all spending on science research and development in the US comes from the pharmaceuticals and biotech industries (Mervis 2017), industries involved in the creation of valuable products designed to benefit consumers' lives and health. Furthermore,

studies have suggested that patents emerging from industry-funded research are often more successful in terms of citations than government-funded research (Hottenrott and Thorwart 2011; Wright et al. 2014). If we treat numbers of citations as proxy for quality and utility of research (Gittelman 2018), it can be argued that industry-funded research can lead to greater social impact, given that it can lead to relatively higher quality research, much of which is in areas such as the production of life-saving drugs, as discussed above. If industry-funded research can lead to more quality innovations, particularly in the sphere of valuable consumer products, then this defends industry funding from a social welfare perspective. This is additionally valuable given evidence that industry-funded research also results in more follow-up innovation, creating positive ripple effects on the total body of scientific knowledge, especially in those vital areas (Wright et al. 2014).

Finally, I present an argument highlighting positive spillover effects that can result from industry funding, by drawing on, and adapting, analysis by Azoulay, Zivin, and Wang in their paper 'Superstar Extinction'. They identify prominent figures in science as 'superstars', based on criteria including citation numbers, awards, and, crucially, funding. Their evidence suggests that the existence of these superstars has spillover effects on non-superstar colleagues. In the absence of these superstars, which they test for using the unexpected deaths of superstars as exogenous variation, co-authors of superstars produce considerably lower output (Azoulay, Zivin and Wang 2010). A key channel which induces this result is that superstars often act as gateways to networks, sources of funding, and prestigious contacts for colleagues. I assert that such evidence can support industry funding since industry funding enables the creation of these 'superstars'. If industry funding manages to concentrate valuable resources into the hands of a sizable number of scientists who then achieve superstar status, the spillover effects are potentially vastly beneficial. Further networks are created with superstars at their centre, which can be used to increase the productivity of the scientific community at large through such 'gateway' effects, resulting in meaningful contributions to the total body of scientific knowledge. Put simply, in addition to the primary research that is funded by the initial industry sponsorship, industry funding can have immense instrumental value given the externalities which can precipitate through the scientific community as third parties benefit from utilising the influence of superstars. Indeed, while it must be noted that industry funding is not the *only* avenue for the creation of superstars, it can be argued to be a prominent one. With a vast number of large corporates looking to engage the scientific community, the creation of said superstars can occur at a prolific rate, especially when considering the more traditional channel of an academic having to steadily build up a superstar reputation over many years. When the spillover effects of all such new superstars are aggregated, it is plausible that the impact of industry funding through this channel has the potential to be a profound one.

I now offer a counterfactual discussion, referring also to incentive structures in science, which compares the states of the world in which industry funding does and does not exist. The sturdiest arguments against industry funding, as outlined in my first two paragraphs, can generally be reduced to issues of scientific fraud or tainted reputation due to fears of scientific fraud. That is, scientists potentially being corrupted in their work in order to meet the expectations of the corporate sponsor. This can be reasonably described as a symptom of the incentive structure that exists in science. That is, in order to advance their careers and gain recognition, scientists often need to compete for scarce funding and offer eye-catching results (Edwards and Roy 2017). It is perhaps plausible then, that scientists would be willing to commit scientific fraud to varying degrees in order to secure industry funding and gain the support of industry sponsors. This seems a legitimate concern given the payoff available: with a large industry backer and high-profile work, scientists achieve name recognition upon which they can build. This can mean being invited to conferences to present findings or access to additional projects and funding off the back of their work (essentially achieving

superstar status as discussed earlier). This appears to align with the idea of 'credit seeking' in science (Bright 2016), where scientists' overarching priority might be to seek credit in this way, as opposed to purely seeking the truth; they might be open to manipulating their work to gain and retain corporate support instead of always promoting the truth of their findings. This plausibly supports my reduction of the most convincing challenges to industry funding down to one core idea: scientific fraud.

I now ask the reader to consider the counterfactual world in which industry funding does not exist. I assert that such a world would not see drastic reduction in scientific fraud anyway. Firstly, assuming that industry funding does indeed inspire credit seeking behaviour, I argue that, if it were banned, just because the credit seeking behaviour that specifically industry funding inspires might disappear, it does not mean that such behaviour in other forms would. For example, there would still exist the incentive for scientists to commit fraud to achieve publication in prestigious journals and secure reputable tenured positions (Seife 2014). Secondly, let us hypothetically concede that banning industry funding inspires a move away from credit seeking motivation entirely. That is, assume also that credit seeking behaviour in other forms too, as described above, disappears, thus creating the strongest possible hypothetical against which I can set up the sturdiest defence of industry funding: a counterfactual world in which the prevailing motivation for scientists is a purely 'truth seeking one'. I argue that such a world in which scientists are not seeking credit, does not necessarily entail a world free from scientific fraud. As discussed in Bright's 'On Fraud' (2016), truth-over-credit seeking behaviour can actually generate situations where scientists might make fraudulent claims anyway. For example, if a scientist believes that her own results have dangerous implications and might lead the scientific community astray, and also believes her influence is such that she can sway the beliefs of that community, she might hide or distort parts of her results (Bright 2016). This might be to save the community from incorrect beliefs, though it is, nevertheless, scientific fraud. While this is just one potential scenario, the fundamental assertion here is that there can exist a range of situations in which even sincere, truth seeking scientists are moved to commit scientific fraud to some degree. My point of the above discussion is this: just because we negate the scientific fraud that might result from industry funding by banning it, there are plenty of other sources of scientific fraud which are independently prevalent, and may become even more so in the absence of industry funding.

Having considered arguments for and against, this counterfactual comparison allows me to conclude in favour of industry funding, and state that it should not be banned. The reasoning is as follows. There are considerable advantages offered by industry funding as discussed above. There are also disadvantages, much of which can be reduced to scientific fraud and its consequences. However, I have shown that removing industry funding would not necessarily negate the threat of scientific fraud. Therefore, if there exist considerable merits, and banning would not necessarily remove costs, it does not make sense to ban industry funding.

References

Azoulay, P., Zivin, J. and Wang, J. 2010. "Superstar extinction". *Quarterly Journal of Economics* 125(2): 549-589.

Besley, J., McCright, A., Zahry, N., Elliott, K., Kaminski, N. and Martin, J. 2017. "Perceived conflict of interest in health science partnerships". *PLOS ONE* 12(4).

Bright, L. 2016. "On fraud". *Philosophical Studies* 174(2): 291-310.

Chopra, S. 2003. “Industry funding of clinical trials: benefit or bias?”. *JAMA: The Journal of the American Medical Association* 290(1): 113-114.

DuVal, G. 2005. “The benefits and threats of research partnerships with industry”. *Critical Care* 9(4): 309.

Edwards, M. and Roy, S. 2017. “Academic research in the 21st century: maintaining scientific integrity in a climate of perverse incentives and hypercompetition”. *Environmental Engineering Science* 34(1): 51-61.

Gittelman, M. 2018. “Patent Citations”. In *The Palgrave Encyclopedia of Strategic Management*, edited by Augier, M. and Teece, D. 1-5. London: Palgrave Macmillan UK.

Hottenrott, H. and Thorwarth, S. 2011. “Industry funding of university research and scientific productivity”. *KYKLOS* 64(4): 534-555.

McCluskey, M. 2017. “Public universities get an education in private industry”. *The Atlantic.* April 3 2017. URL: https://www.theatlantic.com/education/archive/2017/04/public-universities-get-an-education-in-private-industry/521379/

Mervis, J. 2017. “Data check: U.S. government share of basic research funding falls below 50%”. *AAAS*. March 9 2017. URL: https://www.sciencemag.org/news/2017/03/data-check-us-government-share-basic-research-funding-falls-below-50

Seife, C. 2014. “For sale: “your name here” in a prestigious science journal”. *Scientific American.* December 17 2014. URL: https://www.scientificamerican.com/article/for-sale-your-name-here-in-a-prestigious-science-journal/

Sullivan, T. 2019. “A tough road: cost to develop one new drug is $2.6 Billion; approval rate for drugs entering clinical development is less than 12*%”. Policy & Medicine*. March 21 2019. URL: https://www.policymed.com/2014/12/a-tough-road-cost-to-develop-one-new-drug-is-26-billion-approval-rate-for-drugs-entering-clinical-de.html

Wright, B., Drivas, K., Lei, Z. and Merrill, S. 2014. “Technology transfer: industry-funded academic inventions boost innovation”. *Nature* 507(7492): 297-299.