This is the first of a series examining the moral dimensions of economic "externalities", the spillover or incidental side effects in market activity.

The series is available in expanded form, with an introductory chapter and updated essays, as an e-book to facilitate reading and annotating: https://nmichaelbrennen.com/shop/.

In the 1920s and early 1930s, Arthur Pigou, a professor of political economy at Cambridge, wrote the highly influential work *The Economics of Welfare*. In the Preface to the third edition, Pigou concluded with a brief statement that gives insight into the motives behind his work.

"The complicated analyses which economists endeavour to carry through are not mere gymnastic. They are instruments for the bettering of human life. The misery and squalor that surround us, the injurious luxury of some wealthy families, the terrible uncertainty overshadowing many families of the poor—these are evils too plain to be ignored. By the knowledge that our science seeks it is possible that they may be restrained. Out of the darkness light! To search for it is the task, to find it perhaps the prize, which the 'dismal science of Political Economy' offers to those who face its discipline."

Pigou's focus was on economic welfare. Maximizing economic welfare was a matter of efficiency, not of ethics; by maximizing economic welfare, overall welfare was improved through providing the means for people to fulfill their "satisfactions and dissatisfactions" (I.I.8.). Economic welfare was but one part of a greater whole of welfare; for Pigou promoting economic welfare was to identify practical measures which statesmen could use to build on the work of economists. (I.I.5.) Pigou clearly saw a role for the State in offsetting what were called "market failures" (though I could not find precisely that term in the book.)

My focus is limited to Part II of the work, in which Pigou developed the idea of the "marginal social net product" and the "marginal private net product," or the divergence between the net private marginal benefit and the net public marginal benefit or detriment due to a given economic activity. His starting point is to define the "marginal net product," which "must be conceived as flows—as the result ***per year*** of the employment *per year* of the marginal increment of some given quantity of resources" (II.II.1, emphasis original.)

The notion of the "margin" is central to economic thought; per *The MIT Dictionary of Economics* entry for "margin," "'at the margin' means at the point where the last unit is produced or consumed." Thus the marginal net product is the change in production for some small change in inputs. If the last 5 additional units of input resulted in 4 additional units of output (due to some waste,) for an additional 5 units of input an output of 3 additional units is a marginal net loss, and an output of 5 additional units is a marginal net gain.

Pigou divides the marginal net product into a private and social component. The marginal private net product is the change that accrues to the investor(s) who financed the production process; the marginal social product is the change that accrues to anyone, regardless who they are. The marginal private and social net products, may be the same, or one may be higher than the other. An example used by Pigou is that of a railroad throwing sparks into woods by the tracks; if the sparks start a fire and damage the woods, to the extent the damage is uncompensated there is a marginal social net loss (II.II.5.) On the other hand, a lighthouse may

benefit passing ships that did not contribute to its costs, resulting in a positive marginal social net product.

The significance of this for Pigou was that where production resulted in a marginal social net loss, the "national dividend" – that is, "that part of the objective income of the community … which can be measured in money" (I.III.1) – would be negatively affected, with a consequent negative impact on economic welfare – that is, "that part of social welfare that can be brought directly or indirectly into relation with the measuring-rod of money" (I.I.5.) With a negative impact on economic welfare, that is movement away from Pigou's desire that human life be bettered.

In conditions of simple competition, Pigou considered three different instances in which marginal private and social net products could diverge. The first was a case of owner/tenant relationship; the second was people not involved in the production of good; the third was on producers of a good (II.IX.3.) I will focus on the second instance, as questions of externalities tend to focus on those not party to the production process.

Per Pigou, "The essence of the matter is that one person A, in the course of rendering some service, for which payment is made, to a second person B, incidentally also renders services or disservices to other persons (not producers of like services), of such a sort that payment cannot be exacted from the benefited parties or compensation enforced on behalf of the injured parties" (II.IX.10.)

The central idea for Pigou is that there are uncompensated costs or benefits that are incidental to the production process; to converge the marginal private and social net products and thus maximize economic welfare, these costs should be compensated where possible. In contemporary economic parlance, these unintended consequences are "spillover effects," or "externalities;" externalities can be positive or negative, corresponding to uncompensated benefits or costs. As Carl Dahlman interpreted Pigou, externalities exist "when all voluntary contractual arrangements have been entered into by market transactors, there still remain some interactions that ought to be internalized but which the market forces left to themselves cannot cope with" (141.)

Pigou gave a number of examples of the situations he had in mind (II.IX.11-12.) Though not available to the public, a private park in a neighborhood had uncompensated benefits on the surrounding areas, as it improves "the air in the neighborhood" (II.IX.10.) Someone who kept rabbits that damaged a neighboring farmer's crop would need to compensate the farmer for lost goods. A factory that emitted smoke into a neighborhood, dirtying everything and causing other problems, or cars wearing away at the road surface while driving, are unpaid social costs.

I briefly note that Pigou disclaimed any sort of compensation for lost work due to innovation or changes in production methods, what Joseph Schumpeter would call "creative destruction." Thus, railroads were not liable to compensate canal owners for lost revenue due to traffic moving to rail transport, nor were electric utilities liable to compensate gas companies for displaced lighting methods (II.IX.11.)

One solution to remedy such externalities was State intervention in the form of "bounties and

taxes" (II.IX.13.) By granting bounties and levying taxes, these uncompensated external benefits and costs could be internalized to those who create the externalities. For Pigou this would optimize economic welfare, which would contribute to the well-being of all.

Pigou's work in welfare economics had and continues to exert great influence on economic thought. In recent years his work has been reconsidered, partly due to some of Pigou's unstated assumptions, partly due to a seminal paper by Ronald Coase in 1960. I will be considering these responses in future posts.

Dahman, Carl. "The Problem of Externality." *Journal of Law and Economics*, Vol 22, No. 1 (Apr., 1979), pp. 141-162. JSTOR: http://www.jstor.org/stable/725216

Pigou, A.C. (1932) *The Economics of Welfare*. 4th Ed. London: Macmillan. http://www.econlib.org/library/NPDBooks/Pigou/pgEW.html