Executive Summary
The Global Economic Impacts Associated with Artificial Intelligence

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Artificial intelligence ("AI") is a branch of computer science that can broadly be understood as computational devices and systems made to act in an intelligent manner. In other words, AI is a technology that appears to emulate human performance by learning, coming to its own conclusions, understanding complex content, engaging in dialog with people, enhancing human cognitive performance, or replacing humans in executing both routine and non-routine tasks. Technologists have offered a wide array of predictions for how AI will develop over the next decade, ranging from AI being used as a tool to aid relatively simple processes (which some refer to as weak AI) to robots being developed with human-like mental capabilities (which is sometimes referred to as strong AI). This study considers the wide range of possible development tracks for AI and assesses the corresponding range of AI's potential economic impact over the next ten years.

In estimating AI's economic impacts, we note that these impacts will include both direct GDP growth from sectors that develop or manufacture AI technology, and indirect GDP growth through increased productivity in existing sectors that employ some form of AI. This report focuses on the potential net economic effects of AI and not on the specific mechanisms that lead to economic outcomes. While AI is likely to affect both the productivity and employment components of economic growth in many sectors, parsing these effects independently is beyond the scope of this analysis.

Given the challenge (or even impossibility) of accurately predicting which applications of AI will ultimately be commercially successful and to what extent these will be adopted over the next ten years, we do not attempt to calculate a single value for AI's economic effect. Instead, we utilize several approaches, which are described in detail in our report, to construct a reasonable range of estimates of the potential economic effects associated with AI. In doing so, we conclude that a reasonable range for the global economic impact associated with the use, development, and adoption of AI over the next ten years is between $1.49 trillion and $2.95 trillion.

However, and as we discuss in the full report, if AI is ultimately not as successful as some are currently predicting, or if AI develops as quickly and is as widely adopted as its strongest proponents suggest, the economic impacts could be either smaller or larger than our range of $1.49 trillion to $2.95 trillion. Our analysis accounts for the uncertainty associated with AI's economic impacts and yields results which we consider supplemental lower and upper bound estimates to the above range. In particular, our first approach for estimating the economic impact of AI is a "bottom up" approach, which provides a lower bound estimate of $359.6 billion for AI's economic effect if AI ultimately does not develop at the rate some are currently predicting. Our second approach is a "top down" approach, and focuses on the global economic impacts of past technological innovations as potential benchmarks for AI. This approach provides both our reasonable range of $1.49 trillion to

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$2.95 trillion in economic impacts as well as an upper bound estimate, should the adoption and development of AI follow the more optimistic predictions, of $5.89 trillion. As detailed in our full report, a careful evaluation of these methodologies leads us to conclude that our bottom up approach is likely too conservative, while some of our benchmarks in the top down approach are likely too optimistic. Therefore, we conclude that a reasonable range for AI's economic impact is unlikely to include either one of these extremes, but may instead range between $1.49 trillion and $2.95 trillion over the next decade.

It is important to note that our analysis offers informative approximations of AI's potential, but is not intended to perfectly predict the future economic effects of AI. We caveat our results with the points that AI's future diffusion, impacts on developing countries, and effects on employment are potentially wide-ranging and much-debated. Our study is not anchored on any specific future of AI, but rather serves to introduce a range of reasonable economic impacts. In the course of its 60 year history, AI has frequently been heralded as on the cusp of being a significant contributor to global economic growth. Given the AI that exists today, and the increasing availability of large amounts of data and significant computing power, AI may be on the verge of starting to realize its much anticipated potential.