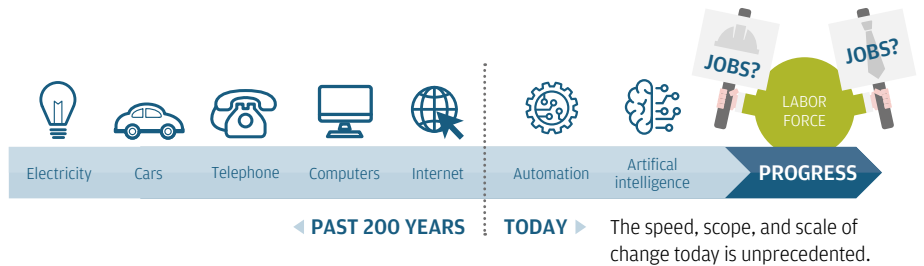


PORTFOLIO INSIGHTS

CAN NEW TECHNOLOGY JUMP-START LONG-TERM ECONOMIC GROWTH?

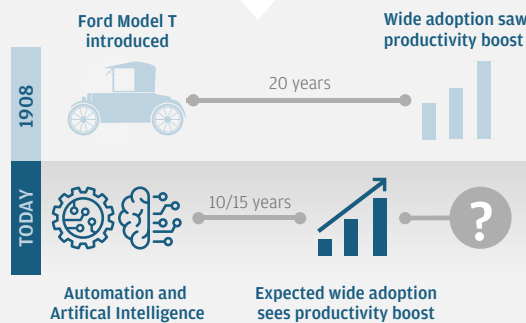
1 DISRUPTIVE TECHNOLOGY IS NOTHING NEW, BUT WILL IT BE DIFFERENT THIS TIME?

Over the past 200 years, the global economy and labor force have proved remarkably good at adapting to disruptive technology.



2 THE IMPACT ON PRODUCTIVITY AND LONG-TERM GROWTH COULD BE PROFOUND

Although recent technological advances have not yet increased productivity, we believe they will.



Estimating the trend GDP boost is complicated by uncertainty over whether rising wages and rising productivity can be achieved simultaneously.

Moderate estimates suggest world GDP gains from automation of **1-1.5 percentage points per annum by 2030**, but only if displaced workers are efficiently re-employed elsewhere in the economy.

3 CONSUMER DEMAND CANNOT BE TAKEN FOR GRANTED

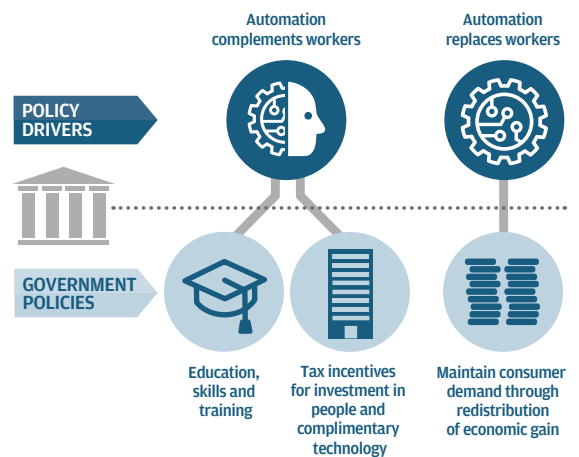
Productivity gains through automation may impact overall consumer demand, as fewer workers gain through wages, and machines consume fewer goods and services than the people they replace.



4 HOW GOVERNMENTS RESPOND WILL BE FUNDAMENTAL

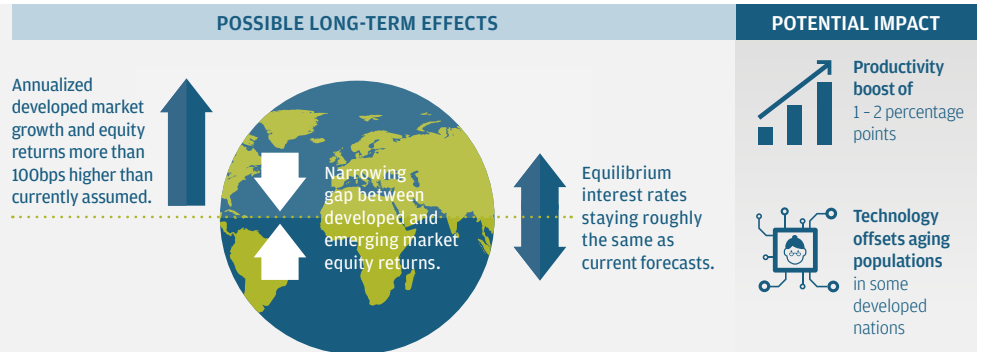
Government policies to prepare the labor force and spread gains more widely will help maintain social and political stability.

We expect governments to avoid policy extremes, deploying a range of policies to spread the economic benefits of automation and artificial intelligence.



5 EARLY EFFECTS ON THE GLOBAL ECONOMY WILL BE MUTED

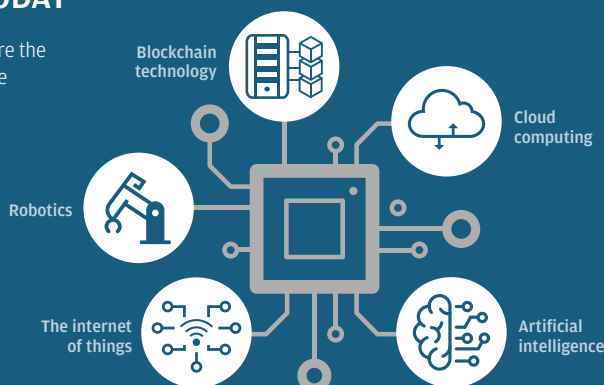
In our view, productivity gains through automation will start to impact asset returns and equilibrium interest rates over the next 10 - 15 years, but to a limited degree.



PORTFOLIO INSIGHTS

FIVE TECHNOLOGIES ARE MOST INVESTIBLE TODAY

We believe there are five areas where the early effects of technological change offer investment potential today.



NEXT STEPS

For more information, contact your J.P. Morgan representative.

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