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Special Commentary

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Global Investment Outlook: Part III
A Look at Tangible Spending on Intangible Assets

Executive Summary

In the third installment of our series on global investment trends, we look at the state of intellectual property spending. Overall investment spending in advanced economies is growing closely in line with its historic trend at present. One area where investment has been weak, however, is intellectual property. Spending on intellectual property products (IPP), which captures the intangible investment businesses make, is currently 4.5 percent below its long-run trend. IPP investment therefore is likely to be one area that continues to fuel the global expansion. Beyond the current cycle, the unique characteristics of intellectual property make it key to raising productivity and economic growth on a prolonged basis.

Investment in intellectual property is far from over-extended.

Defining the Intangible

Intellectual property products (IPP) capture the physically intangible investments companies make. With a more wonky name than "equipment" or "structures" prescribed to this category, it is perhaps easiest to understand IPP by its subcomponents. The first major component of IPP is software. Like a new piece of equipment, the latest and greatest software can make workers' jobs easier and allow them to produce more. Software investment includes both pre-packaged products and in-house developments that are not sold on the market.

The second major component of IPP is research and development. Historically, R&D was categorized as an expense. Increasingly, however, R&D is being recognized and accounted for as investment. The United Nation's System of National Accounts, which sets international standards for GDP accounting, defines R&D investment as "creative work undertaken on a systematic basis to increase the stock of knowledge, and use of this stock of knowledge for the purpose of discovering or developing new products, including improved versions or qualities of existing products, or discovering or developing new or more efficient processes of production." As such, R&D is like a new piece of machinery that creates products or improves the production process.

In addition to software and R&D, IPP also includes "entertainment, literary and artistic originals." While movies, books and music may not strike one as "investment," it represents a relatively small share of IPP. In the United States for example, where the entertainment industry benefits from a relatively global reach, this type of "investment" accounts for only about 10 percent of IPP.

In some countries, mineral exploration is also incorporated in IPP. In others, however, such as the United States, mineral exploration is categorized under structures. Where possible, we exclude mineral exploration from our measure of intellectual property investment and move it to the structures component of investment spending. The countries most affected by this change are Canada and Australia, where mineral exploration has at times during our sample period accounted for more than 25 percent of IPP.[1]

[1] A breakout was not available for some countries in our dataset, including the Eurozone and United Kingdom, although based on the size and structure of their economies, we suspect this has had little impact on our aggregate global estimates of IPP investment.

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Plenty of Room for Intellectual Property Investment to Run

Intellectual property has grown in importance to total investment.

Investment in intellectual property products has steadily grown in importance over the past two decades and currently comprises almost 30 percent of investment spending in advanced economies. IPP spending tends to be less cyclical than more traditional forms of investment such as equipment and structures. The shorter shelf-life and typically lower price tag of software compared to equipment and structures means companies need to re-invest more frequently and are less likely to hold off on outlays for the broader economic environment to improve (Figure 1). At the same time, the lengthy nature of private R&D and its tendency to be financed internally makes IPP investment relatively steady when compared to equipment and structures.

Figure 1

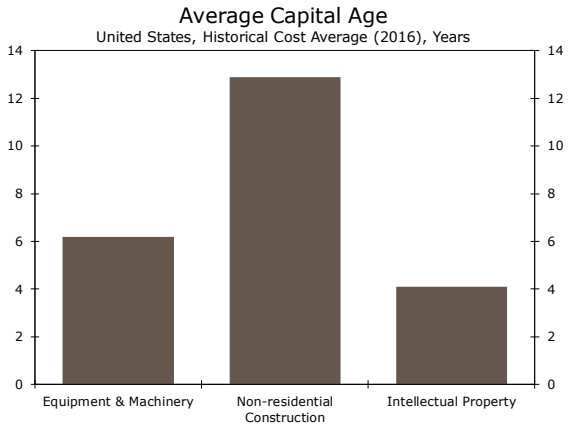
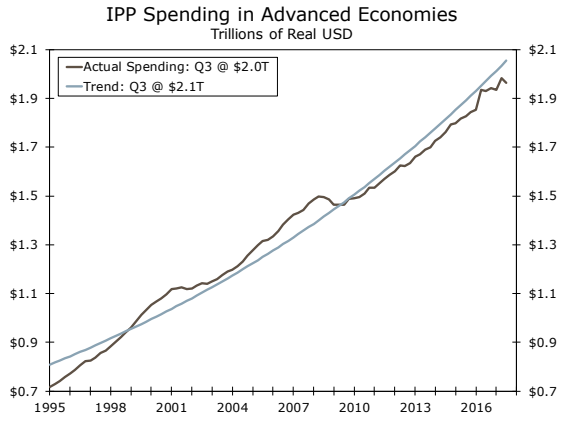


Figure 2



Source: Eurostat, IMF, IHS Markit, U.S. Department of Commerce and Wells Fargo Securities

That is not to say that IPP investment is immune to fluctuations. The tech-bubble in the late 1990s is a prime example of how software spending can get ahead of itself. Therefore, IPP investment can at times deviate from its underlying trend, even if the magnitude is not as stark as those seen in the equipment and structures category. For instance, in early 2001, IPP spending had crested almost 8 percent above its trend.

At present, investment in intellectual property has been running below its long-term trend (Figure 2). In the third quarter of 2017, the latest period in our dataset, spending on IPP among advanced economies was 4.5 percent below trend. That represents the largest shortfall since 1997 when the tech boom was beginning to get underway. As such, we believe private investment in intellectual property products is far from over-extended.

Under-Investment in IPP Is Widespread Across Advanced Economies

Under-investment in IPP has been the norm across advanced economies in recent years.

Is there the same potential for a pickup in IPP investment across countries? Figure 3 illustrates the gap between current spending on intellectual property products and each country's respective long-run trend. Under-investment has been the norm across advanced economies in recent years, although to varying degrees.

In most of the countries in our study, the shortfall stems from slower growth in software spending. Software investment in advanced economies ramped up in the late 1990s and early 2000s amid the diffusion of information and communication technologies (ICT). The rapid rate of adoption, which led to the U.S. tech bubble, lifted the overall trend in software spending. Now with software widely adopted, the same pace of growth registered nearly two decades ago has been hard to match. Investment in software is 9 percent or more below its trend in the United States, Japan, Korea and Canada.[2] Only in Australia is software spending growing in line with historical rates (Figure 4).

[2] Detailed breakouts of IPP components were not available for the Eurozone and United Kingdom, while details on Japan's IPP investment were only available annually through 2016.

Figure 3

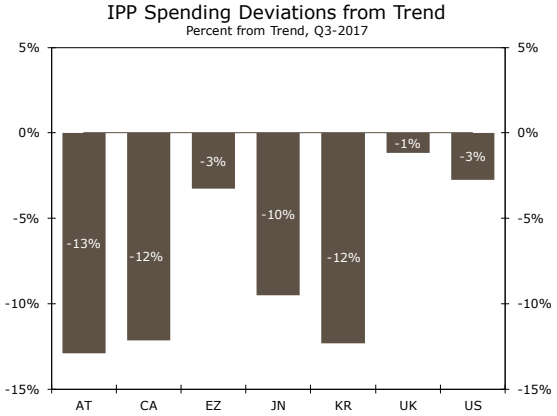
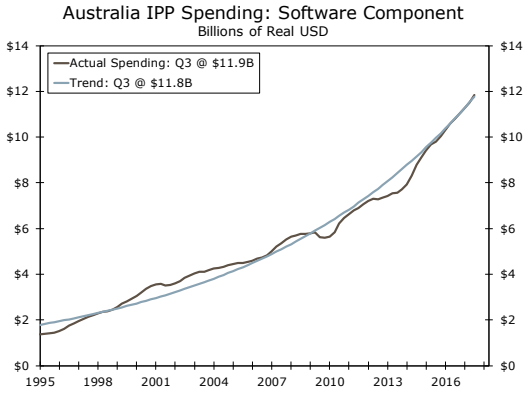


Figure 4



Source: Eurostat, IMF, IHS Markit, U.S. Department of Commerce and Wells Fargo Securities

By our analysis, however, Australia still records the largest shortfall in total intellectual property investment. That is because private R&D spending is a whopping 22 percent below its historic trend. Canada and Korea have also seen R&D investment flag in recent years, leading to deficits of 9 percent and 10 percent, respectively. Changes—or lack thereof—to R&D policy after concerted efforts in the late 1990s and early 2000s to raise business R&D have likely contributed to the slowdown in Australia and Canada. The drop in commodity prices, which hit equipment and structures spending in both countries particularly hard, also has weighed on related R&D spending. In Korea, where nearly 90 percent of private R&D is undertaken by manufacturers, the slowdown in global trade has taken a toll on R&D investment, similar to the late 1990s and during the Asian Financial crisis.[3]

Headwinds and Tailwinds: The Outlook for IPP Investment

By our analysis, intellectual property is currently seeing the biggest shortfall among major investment categories in advanced economies, implying upside potential. But will we see investment in this category live up to its potential?

Spending on IPP is benefiting from the transition to a more service-based economy.

The growing importance of IPP in the modern economy suggests that investment in this category should remain strong and account for an increasing share of GDP (Figure 5). Spending on intellectual property products is benefiting from long-term trends, including the transition to a more service-based economy. While companies in the service sector still need physical equipment like computers, or structures like office buildings, intellectual property products tend to comprise a larger share of investment than in goods-producing industries. In the United States for example, service industries devote about 40 percent of investment toward intellectual property compared to 20 percent in the goods-producing sector. Therefore, the continued long-run shift to a more-service oriented economy should be supportive of advanced economies' spending on intellectual property products.

[3] **OECD Research and Development Expenditure by Industry, 2017**

Figure 5

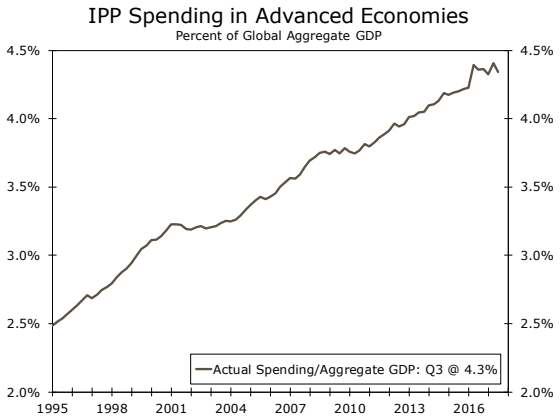
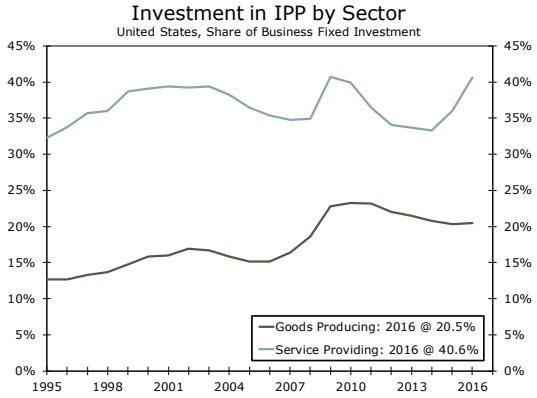


Figure 6



Source: Eurostat, IMF, IHS Markit, U.S. Department of Commerce and Wells Fargo Securities

Beyond the service sector, the growing importance of advanced technology stands to benefit IPP investment. Digital technology has become more heavily used across all industries. Software runs machinery at advanced manufacturing plants, while research and development remains a vital way for the manufacturing industry in advanced economies to stay competitive with producers in developing economies. Perhaps not surprisingly then, IPP investment has taken on growing importance even within the goods producing sector. For example, although the U.S. goods-producing sector allocates only 20 percent of investment toward IPP, that is up from 13 percent in 1995 (Figure 6).

As discussed earlier, however, the long-term trend in IPP was likely raised by the software investment frenzy surrounding the tech bubble. As a result, it may not be surprising for IPP to continue to run below its current trend line for some time even as it continues to outpace other areas of the economy.

The ability for IPP to be used by other businesses can deter spending.

In addition, the intangible nature of intellectual property can create headwinds for investment. The ability for IPP investments to be used by other businesses, including competitors (as recent trade discussions have highlighted) can deter spending. Software created in-house can be copied and used elsewhere; research and development can create spillovers that other companies and industries can benefit from. While that is good for the economy as a whole, it can discourage individual companies from undertaking such investment in the first place. That makes policies surrounding the protection of intellectual property and public funding for basic research (which lays the ground work for applied industry research) an important factor in the outlook for private IPP investment.

Conclusion: IPP Investment Holds the Key

Investment in intellectual property in advanced economies looks weak at present relative to its historic trend. That suggests that business spending in this area is far from being over-extended, and, as a result, investment in intellectual property is likely to be one area that continues to fuel the global expansion.

IPP investment could be integral to improving productivity.

A pickup in IPP investment would not only support near-term growth, but could be integral to improving productivity. As we mentioned in the first installment of this series, productivity can be divided into two drivers: growth in capital spending (the actual equipment and facilities used by workers) and growth in total factor productivity (the intangibles that affect output per worker, such as education and or new innovations). A new machine or rail car might work better than the old one and raise worker productivity. However, the revolutionary innovations that can lift productivity growth on a more sustained basis stem from total factor productivity (TFP), which is more often the result of "intangible" investment. [4]

[4] **Cardarelli, Roberto and Lusine Lusinyan. "U.S. Total Factor Productivity Slowdown: Evidence from the U.S. States." IMF Working Paper 15-115, May 2015.**

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