Remarks by Assistant Secretary for Economic Policy (P.D.O.) Eric Van Nostrand on U.S. Business Investment in the Post-COVID Expansion

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As Prepared for Delivery

I am honored to join you at PIIE, an institution that has done as much as any to help policymakers and the public think through the trade-offs that animate the thorniest questions of economic policy. I am grateful to Adam Posen for extending his welcome; to Caroline Atkinson, our distinguished moderator; and to all of you for joining us.

I am privileged to lead Treasury's Office of Economic Policy in the Biden Administration. Our team works to inform the Administration's policymaking process with rigorous economic analysis and to understand the economic impact of our existing policies. Today I am excited to think through with all of you a topic of central importance to the U.S. economy and to our Administration's goals: the state of and outlook for American business investment.

The Biden Administration has promoted policies encouraging business investment because it is necessary to improve outcomes for American families in the long run. For a prosperous corporate sector to truly benefit families and workers, businesses must feel confident investing their profits to generate new jobs, opportunities, and innovations. And by recognizing the public sector's role in creating incentives to solve market failures in strategically important industries like clean technology and semiconductors, we can expand our economy's ability to produce in the long run: a strategy that Secretary Yellen has called "modern supply-side economics."

Business investment has been surprisingly strong in the post-pandemic economy. Higher interest rates raise firms' borrowing costs and are typically expected to slow investment growth. Higher uncertainty around macroeconomic forecasts in the post-pandemic expansion should also have slowed investment. But instead, business investment has grown faster in the United States than before the pandemic. I will begin by considering the post-pandemic

performance of U.S. private nonresidential fixed investment (business fixed investment, or "BFI") against three counterfactuals: historical experience, forecasters' expectations, and international comparators. I will show that U.S. BFI has outperformed all three counterfactuals since the pandemic.

The well-documented surge in construction of high-tech manufacturing facilities related to public incentives in the CHIPS and Inflation Reduction Act explains much of the outperformance. There's more to it than just those public incentives: I will explore evidence that global investors perceive abnormal returns to U.S. investment even outside those strategic sectors, including the rise in entrepreneurship and the rise in foreign direct investment into the United States. But the contributions of CHIPS and the IRA to the investment boom are palpable.

Finally, I will consider the outlook for business investment. The tailwind from manufacturing construction cannot continue in perpetuity and may become a drag on BFI growth in the coming years as groundbreakings recede. But if incentives to invest in the clean energy and semiconductor space persists, investors' focus is likely to shift from building those factories to bringing them online and staffing them, creating upside for equipment and intellectual property investment. Any steps by the next Administration to weaken these important incentives risks slowing investment growth, and thereby undermining the important progress that American businesses have made expanding our productive capacity.

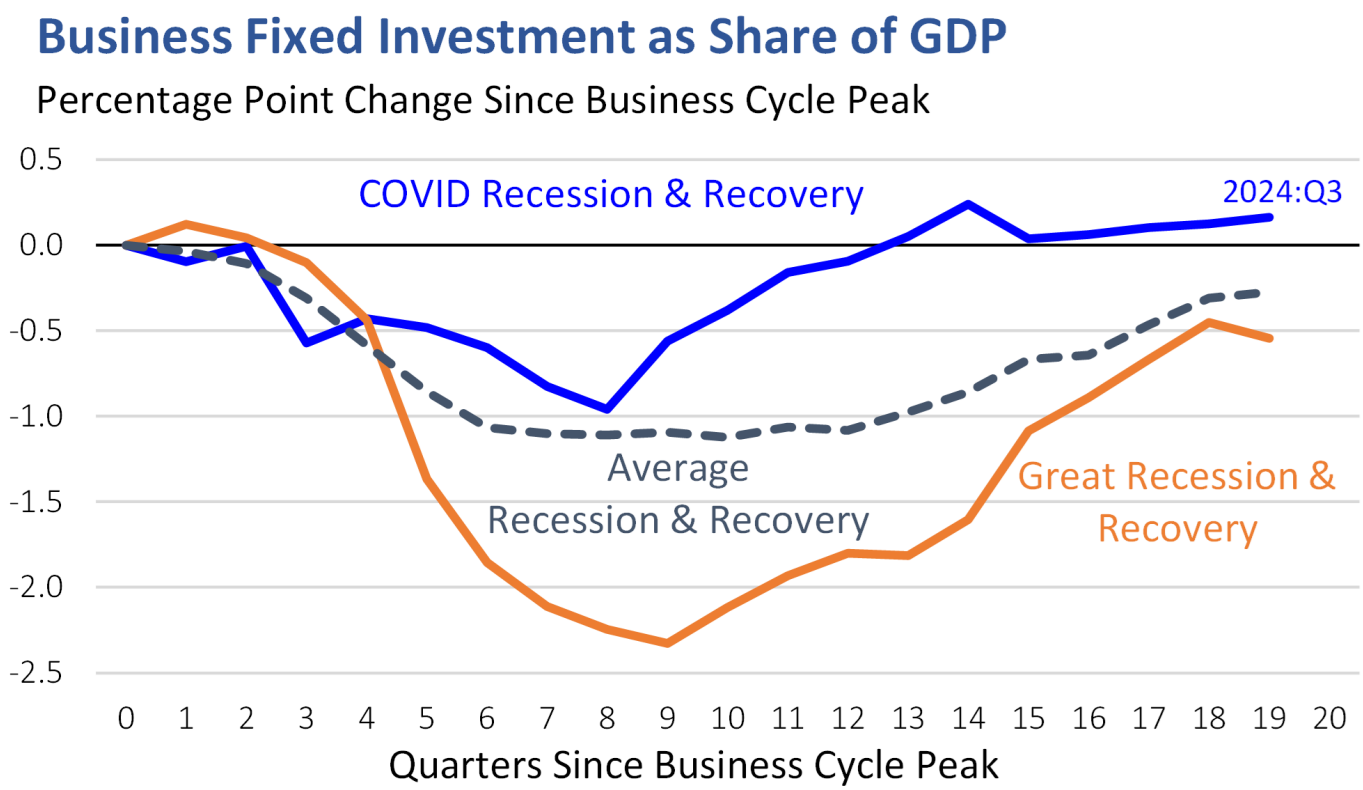
THREE COUNTERFACTUALS FOR ASSESSING BUSINESS INVESTMENT

Historical Business Cycle Behavior

First, let me consider a historical counterfactual. Figure 1 shows BFI as a share of GDP since the COVID business cycle peak (blue), compared with the analogous period in the Great Recession and Recovery (orange), and the average behavior in all U.S. business cycles since 1971 (dotted). Typically, investment tends to fall as a percent of GDP in a recession and to continue to contribute less well into the recovery. This was especially the case in the 2008 Great Recession, when business investment as percent of GDP fell by more than 2 percentage points. In recent years, business investment has bucked that trend, remaining at roughly the same share of GDP since before COVID: a better outcome than after every other recession

since 1980. Indeed, in this cycle, American businesses invested $625 billion more than if overall growth had been the same but investment followed its usual historical pattern.[1]

Figure 1



Notes: Business cycle peaks are the National Bureau of Economic Research's quarterly business cycle peaks. "Business fixed investment" is private nonresidential fixed investment. Source: Bureau of Economic Analysis; National Bureau of Economic Research; U.S. Treasury calculations.

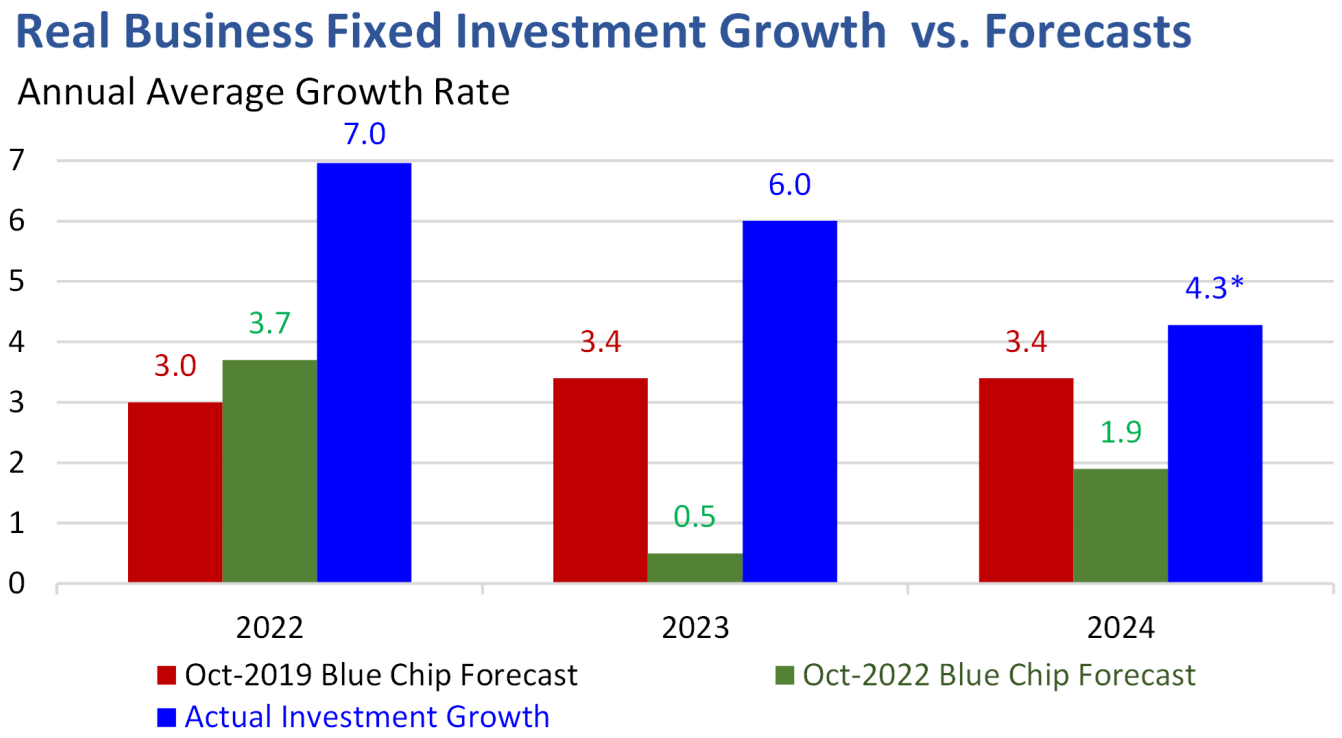
Professional Forecasters

A second benchmark: what did economic forecasters expect for business investment growth earlier in the cycle? U.S. business investment has generally outpaced economists' "conventional wisdom," as measured both by consensus forecasts and using conventional modeling tools.

Figure 2 shows actual calendar-year growth in business investment (blue bars) for 2022-2024, alongside the Blue Chip consensus forecasts for October 2019 (red bars) and October 2022 (green bars). Realized investment has outpaced the pre-COVID and post-COVID forecasts. The pre-COVID forecasts from 2019 reflected the expectation that a historically middling rate of business investment growth between 3 and 4 percent would persist in the years ahead. Of

course, those forecasts were missed significantly in 2020 as investment collapsed during the pandemic, and were beaten significantly in 2021 amid the reopening. But even once aggregate growth normalized in 2022, investment has continued to rise at a pace significantly above the pre-COVID forecasts, The post-COVID forecasts from October 2022 reflected an environment where the Federal Reserve's interest rate hikes were well underway and markets expected persistently higher rates. Actual business investment growth outperformed each of these forecasts from 2022 to 2024 to date.

Figure 2



*Notes: Actual investment growth reflects the actual annual average growth rate in private nonresidential fixed investment. Blue Chip Forecasts are the consensus forecasts for the same reported by Blue Chip Economic Indicators in October 2019 and October 2022. *For 2024, an estimate of actual growth is shown assuming that reported growth rate in the first three quarters of 2024 persists in the fourth quarter. Source: Bureau of Economic Analysis; Blue Chip Economic Indicators; U.S. Treasury calculations.*

It is useful to consider what sort of mechanical logic drove those prevailing forecasts (pre-COVID and post-COVID) for historically middling business investment growth. In the classical accelerator model, changes in the capital stock are driven by changes in output. Firms invest based on their desired level of capital, itself proportional to output, to maximize their expected future profits, not simply because they currently have high profits or substantial

retained earnings. Capital then increases when output growth increases; that is, businesses invest more when the economy grows faster.

Figure 3 implements the Jorgensen-Siebert (1968) accelerator model, in which investment depends on recent lags to overall output growth. In the immediate pandemic recovery, these models predicted a quick rebound in investment, which was indeed matched by reality. But once the economy cooled from that initial burst of growth, the models called for slower investment growth as shown on the right side of Figure 3. From the second half of 2022 through 2024, investment grew significantly faster than a conventional accelerator model would imply. Firms were investing more quickly than conventional models implied.

Figure 3

Other Advanced Economies

Comparing the U.S. experience to other advanced economies provides a third counterfactual. Global challenges including the upturn in inflation and the ensuing increase in global interest rates impacted other advanced economies (albeit to varying degrees), but something has been markedly different with respect to American investment.

It has been widely recognized that aggregate U.S. growth has run faster than that of other G7 economies.[2] And investment is an important contributor to that outperformance. Figure 4 compares the change in real investment from pre-pandemic levels—the 2019 average—to the

most recent four quarters ending 2024:Q2 across the G7. Comparing similar concepts of business investment across countries can be challenging, but Figure 4 seeks to identify the closest proxy possible in each country to the U.S. concept of business investment: real capital formation by private actors excluding residential investment.

By these measures, U.S. outperformance is quite striking: business investment has risen almost 17 percent since 2019, nearly double the closest other G7 country (Italy). Indeed, a few G7 countries are still seeing real investment levels below that which prevailed over the pandemic. To be sure, other G7 countries have faced different challenges than the United States, not least Europe's proximity to shocks from the Russian invasion of Ukraine. But U.S. outperformance is striking nonetheless.

Figure 4

Notes: Data for other countries seek to mirror the U.S. BFI concept as closely as possible given each country's national accounts structure. United Kingdom is real gross fixed capital formation for business investment. Japan is real gross private non-residential domestic investment. Canada is business fixed investment less residential structures investment, deflated by the gross fixed capital formation implicit deflator. France is non-government gross fixed capital formation less dwelling investment, deflated by the gross fixed capital formation implicit deflator. Germany is private fixed investment less residential construction, deflated by the gross fixed capital formation implicit deflator. Italy is gross fixed capital formation less fixed investment in housing and general government expenditure on gross fixed investment,

deflated by the gross fixed capital formation implicit deflator. Source: Statistics Canada; Institut National de la Statistique/Economique (France); OECD; Deutsche Bundesbank and Federal Statistical Office (Germany); Instituto Nazionale di Statistica (Italy); Cabinet Office of Japan; Office for National Statistics (U.K.); U.S. Bureau of Economic Analysis; Haver Analytics; U.S. Treasury calculations. All data seasonally adjusted, either by the source or with X-13-ARIMA.

Figure 5 presents the time series of real business fixed investment across each G7 economy, indexed to 2019 levels. The United States generally kept pace with Italy and France in 2021, but has pulled away more recently.

Figure 5

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Institut National de la Statistique/Economique (France); OECD; Deutsche Bundesbank and Federal Statistical Office (Germany); Instituto Nazionale di Statistica (Italy); Cabinet Office of Japan; Office for National Statistics (U.K.); U.S. Bureau of Economic Analysis; Haver Analytics; U.S. Treasury calculations. All data seasonally adjusted, either by the source or with X-13-ARIMA.

DRIVERS OF U.S. OUTPERFORMANCE

Construction for High-Tech Manufacturing

I will turn now to candidate explanations for the performance of business investment in the United States. First, decomposing investment from an accounting perspective can help shed some light. The national accounts divide business investment into structures investment (construction), equipment investment (physical capital expenditures outside construction), and intellectual property investment (including research and development, software, and other non-physical capital formation). Figure 6 decomposes investment growth along these lines, further dividing structures investment into construction for manufacturing and non-manufacturing.

Over the 35 years leading up to the Great Recession (left bar) and the 12 years following the Global Financial Crisis (middle), the average composition of business investment growth was largely consistent: significant contributions from investment in equipment and in intellectual property, with some small varying contribution from changes in structures investment (construction) in non-manufacturing sectors. Investment in manufacturing structures (factory construction) made no contribution on average.

But since 2021, the picture has looked different; average contributions from equipment and intellectual property have been largely consistent, but a new contributor has appeared: construction for manufacturing structures (essentially, factory building). Factory construction has added more than 1 percentage point at an annual rate to BFI growth on its own, explaining most of the elevated rate of BFI growth relative to history.

Figure 6

Notes: Growth in private nonresidential fixed investment is decomposed into contributions from equipment, intellectual property, manufacturing structures, and other structures over the indicated time periods. Contributions are inferred from the given subcomponents' published contributions to private fixed investment growth, and then scaled by the ratio of private nonresidential fixed investment growth (BFI growth) to BFI growth's contribution to overall private fixed investment growth. Source: Bureau of Economic Analysis; U.S. Treasury calculations.

The surge in factory construction is well documented: spending has more than doubled in real terms since 2021 and it has further increased since then.[3] Of course, one should not expect this surge to continue in perpetuity, so its contributions to business investment *growth* should dwindle. But it has reflected a new kind of private investment that helps explain the resilience of overall business investment. Data from the Census Bureau allows us to further decompose the surge in manufacturing construction. Figure 7 compares the composition of real manufacturing construction spending on average from 2005-2022 to the average since the beginning of 2023. Factories in "computer, electrical, and electronic" manufacturing are the obvious source of the surge—a category that includes semiconductors and electric vehicle batteries. This is consistent with the CHIPS and Science Act and the Inflation Reduction Act achieving their aim of encouraging private investment in semiconductor and clean technology manufacturing.

Figure 7

Notes: Value of private construction put in place for manufacturing decomposed by detailed type. Monthly at a seasonally adjusted, annualized rate. Nominal spending is deflated by the producer price index for intermediate demand materials and components for construction. Source: U.S. Census Bureau; Bureau of Labor Statistics; U.S. Treasury calculations.

Here, international context is again helpful to identify the drivers of the shift. No harmonized data series provides an exact comparison to the United States, but comparable data indicators help unveil the relevant trends. Importantly, the boom appears to be uniquely American.

Other advanced economies have not experienced similar increases, according to roughly analogous data sets measuring some concept of real construction for manufacturing purposes (Figure 7). Japan has had seen increases in the floor area of new manufacturing over the past year, but construction remains below pre-pandemic levels. Germany's real new construction spending on factory and workshop buildings has remained relatively stable over the past decade. Notably, the United Kingdom and Australia did see some meaningful increases in real industrial construction in 2022 and 2023. But those series have leveled off or fallen since then, over the period in which U.S. manufacturing construction has nearly doubled.

Figure 8

Notes: U.S. Value of Private Construction Put in Place for Manufacturing, U.S. Census Bureau. Monthly at a seasonally adjusted, annualized rate. Nominal spending deflated by the Producer Price Index for Intermediate Demand Materials and Components for Construction, Bureau of Labor Statistics. United Kingdom Construction Output: Other New Work, Private Industrial, Office for National Statistics. Annual millions of chained 2019 Pounds. Japan Building Starts,

Floor Area: Manufacturing, The Ministry of Land, Infrastructure and Transport. Annual millions of square meters, seasonally-adjusted by authors. Germany New Construction: Factory and Workshop Buildings: Estimated Costs, Federal Statistical Office. Annual millions of chained 2011 Euros. Australia Private New Capital Expenditure: Manufacturing: Buildings/Structures, Australian Bureau of Statistics. Annual millions of chained FY 2021 Australian Dollars.

High Returns to Private Capital

It is clear that the factory building boom explains a significant share of business investment's outperformance since the pandemic, and it is clear that the boom reflects a surge in areas encouraged by the CHIPS and Science Act and the Inflation Reduction Act. But as shown back in Figure 4, even if the contribution from factory-building disappeared, other components of BFI are still growing at higher levels than history, despite the headwind of higher interest rates.

So factory-building alone cannot be the whole story. American businesses are still investing as if they expect abnormally high returns to investing in the United States, even outside those sectors explicitly encouraged by the Biden Administration policies.

Indeed, estimates of the return to all private capital—while difficult to observe directly—suggest that realized returns to investment remain historically high. Observing these high returns gives businesses confidence that their investments will pay off in the future. Perhaps best understood as the "aggregate return on all private investment," the return to all private capital reflects the total returns generated by the full capital stock of the United States. Estimates vary, but Figure 9 uses the methodology developed in Furman (2015). This measure of the return to private capital has hovered around 7 percent since 2015, a figure that remains well above today's elevated borrowing costs. This calculation is only available through 2023, but strong corporate profit growth and high recent returns in public equity markets, even relative to higher interest rates, suggest that businesses are observing no slowdown in returns available in the market.

Figure 9

Notes: The return to all private capital is measured as in Furman (2015), as the private capital income as a percent of the prior year's private capital stock. Private capital income is defined as the sum of 1) corporate profits excluding federal government tax receipts on corporate income, 2) net interest and miscellaneous payments, 3) rental income of all persons, 4) business current transfer payments, 5) current surpluses of government enterprises, 6) property and severance taxes, and 7) the capital share of proprietors' income, where the capital share was assumed to match the capital share of aggregate income. The private capital stock is defined as the sum of 1) the net stock of produced private assets for all private enterprises, 2) the value of total private land inferred from the Financial Accounts of the U.S., and 3) the value of U.S. capital deployed abroad less foreign capital deployed in the U.S. Source: Bureau of Economic Analysis; Federal Reserve Board; U.S. Treasury calculations.

There are two pieces of evidence suggesting that business leaders expect these high returns to continue. The first is that more Americans are starting firms. The higher rate of start-ups suggests that more founders expect strong returns from starting businesses than otherwise. There has been a well-recognized[4] surge in applications to start new businesses since the pandemic, with over 19 million new applications since the end of 2020. While the pace of new business applications has eased somewhat from its heights last year, as shown in Figure 10, that pace remains well above the steady pre-COVID rate. While business formation data for the pandemic period are not fully available, application rates are predictive of actual business

formations. Actual business formations from the subsequent eight quarters have a correlation coefficient of +0.9 with applications from likely employers.[5]

Figure 10

Notes: Applications with planned wages are those that include an explicit date when wages will first be paid. High-propensity business applications are those that the Census Bureau considers likely to pay wages, including those with planned wages as well as other indicators. Source: U.S. Census Bureau.

The surge in business applications following the pandemic is so sharp that one might wonder whether it truly reflects a rise in entrepreneurship, or whether it may be some measurement artifact related to a pandemic-era distortion. However, several pieces of evidence suggest that the surge is real and no well-supported alternative explanation has been offered a few years into this trend.

First, as shown in Figure 10, the surge is not confined to the broadest set of business applications, which includes many sole proprietorships or other entities that may not fit prevailing understandings of a “small business” (left panel). A similar surge is present for those applications the Census considers having a high propensity to pay wages (middle panel), as

well as those who indicate a date on which they will begin paying wages (right panel). Second, the surge follows the patterns of broader post-COVID economic changes. Haltiwanger (2022) [6] showed that the surge was concentrated in industries likely well suited to a work-from-home environment, such as non-store retailers and professional, scientific, and technical services. Decker and Haltiwanger (2023)[7] examined the geographic distribution of applications and showed they were concentrated in "donuts" around urban centers, consistent with post-pandemic residential and workplace shifts. CEA (2024)[8] examines a broader set of administrative data that helps establish the veracity of the surge.

While much more work will be done to understand the surge, the evidence suggests that there is a real impulse here. This is not simply a rebound from the pandemic. There are many candidate explanations: the prevalence of remote work or the gig economy making the decision to start a business less costly or risky, the rise in household wealth experienced since the pandemic enabling more people to risk opening businesses, or even a broader shift in cultural attitudes toward risk-taking. In any case, we observe that more Americans are starting small businesses at a faster rate just as those businesses are playing a growing role in our economy. It is worth noting that those businesses need capital— phones, computers, software, printers, and cars — whether they are launched in the garage, the basement, or an incubator.

A second piece of evidence that business leaders are perceiving higher than normal returns is the picture from inbound foreign direct investment. During the prior expansion, FDI into the United States generally comprised between 10 and 25 percent of global FDI, as shown in Figure 11. But it has spent much of the post-pandemic recovery above that range. More recently, it has settled back into the high end of its old range, but United States is clearly attracting a larger share of global FDI in this cycle than the last. This trend likely has many drivers, but it is consistent with business leaders perceiving especially high returns to investment in the United States.

Figure 11

Notes: Inbound foreign direct investment (FDI) is the value of investment from foreign investors flowing into resident U.S. firms as a proportion of all such flows globally. Inbound flows are net of transactions that decrease the total investment of foreign firms in U.S. enterprises. Source: OECD; U.S. Treasury Calculations.

DISTRIBUTIONAL PERSPECTIVES

I will turn now to the distributional implications of strong U.S. business investment, with a particular focus on two elements that we have already discussed: the investment surge in clean energy technologies associated with the Inflation Reduction Act and the increase in U.S. entrepreneurship.

Geographical Distribution of High-Tech Manufacturing Investments

We analyze the geographic and socioeconomic distribution of clean energy investment announcements using data from the Clean Investment Monitor (CIM). The CIM is a joint product of the Massachusetts Institute of Technology and the Rhodium Group that catalogs and maps U.S. clean energy investments before and after the IRA passed. Since the IRA passed, clean investments have been landing in more economically disadvantaged counties: those with below average wages, incomes, employment rates, and college graduation rates.

More than 75 percent of post-IRA clean investments have gone to counties with below-average median incomes, as shown in Figure 12; more than 85 percent have gone to counties with below-average college graduation rates. This is true across all regions of the country and all technologies supported by the IRA; the investment and benefits tend to accrue to disadvantaged counties. We detailed these findings further in Treasury (2024).[9]

Figure 12

Notes: Median household income is the 2022 value. College graduation rate, defined as a Bachelor's degree or higher, is the 2022 value from the American Community Survey. Source: Clean Investment Monitor; U.S. Census Bureau; U.S. Treasury calculations.

Racial Distribution of Self-Employment

One underappreciated aspect of the entrepreneurship surge is that the population of Americans working for themselves is growing more diverse. Self-employed workers reflect an important subset of small business owners: those who work for profit in their own unincorporated business.[10] The share of self-employed Americans who are Black is also near its all-time high after surging throughout the expansion (Figure 12). This observation is consistent with data from the Survey of Consumer Finances showing that Black business ownership grew faster between 2019 and 2022 than over the previous thirty years.[11]

Figure 13

Notes: Non-agricultural industries. Data are smoothed with a three-month moving average. Data are not seasonally adjusted, though seasonal adjustment with X-13-ARIMA has a negligible impact on the series. Source: Bureau of Labor Statistics; U.S. Treasury calculations.

OUTLOOK: HEADWINDS AND TAILWINDS

U.S. business investment is outperforming history, expectations, and that of our peer countries. But the outlook for the coming years remains uncertain. We have little historical precedent for the next phase of clean energy and semiconductor investment. We cannot expect the same abnormal growth in manufacturing construction that has been so important to investment in the recent past, but we should expect new forms of investment as those factories come online. We try to stay out of the forecasting business in the Administration, but Goldman Sachs argued this week[12] that equipment investment will boost growth in BFI by 2 percentage points next year, as IRA and CHIPS-factories are built out. Goldman believes this effect will offset most of the drag from slower factory construction.

An important risk to that outlook, though, is the potential that the incentives for continued investment in the clean technology and semiconductor space are reduced under the next Administration. These incentives are an important mechanism for encouraging more private

investment, as we have seen in recent years. And any steps to weaken them threaten to undermine that progress.

Financial markets largely expect interest rates to continue to fall over the course of the year, unwinding one of the principal headwinds for business investment this cycle. The policy landscape will surely impact the outlook as well. Lower tax rates on corporations can increase near-term investment, but trade-offs between such near-term fiscal expansion and long-term fiscal sustainability may be tested more than ever before. The prospect of broadly applied tariffs also stands to weigh on investment. Goldman Sachs found that the increased tariffs of 2019 weighed on investment by increasing firms' input costs, baiting retaliatory tariffs against U.S. goods, and adding to broader policy uncertainty. Taken together, Goldman found that the 2019 tariff increases were associated with a 1-1.6 percent fall in total investment.[13]

Despite the near-term uncertainty, U.S. businesses have been persistently investing at historically robust rates since the pandemic, with more Americans starting businesses and more global investors looking to the United States to invest. The high level of investment has grown and will continue to grow the capital stock, even if further growth in investment itself subsides, driving faster growth of the capital stock and therefore our potential output. There is much reason to be optimistic that the business sector's success growing our productive capacity will persist in the years ahead.

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[1] Actual business fixed investment from 2020:Q1 to 2024:Q3 was $16,287 billion, when summed over periods. As a counterfactual, we measure what business fixed investment would have been if actual nominal GDP figures were realized over that period, but business fixed investment as a share of GDP followed the average pattern depicted in the dotted line in Figure 1; this is $15,661 billion, for a difference of $626 billion.

[2] See, for example, Ben Harris & Robin Brooks, *The U.S. Recovery from COVID-19 in International Comparison* (Brookings 2024).

[3] Van Nostrand, Eric, Tara Sinclair, and Samarth Gupta. "Unpacking the Boom in U.S. Construction of Manufacturing Facilities." U.S. Department of the Treasury. June 27, 2023. See *Appendix* for more detail on the choice of deflator used for measuring manufacturing construction in these remarks.

[4] See, for example, U.S. Department of the Treasury. U.S. Business Investment in the Post-COVID Expansion (June 2024); and Council of Economic Advisers. New Business Surge: Unveiling the Business Application Boom through an Analysis of Administrative Data (January 2024).

[5] “Likely employers” are those the Census Bureau defines as “high-propensity” applications. See the notes to Figure 10 for more detail.

[6] Haltiwanger, John C. "Entrepreneurship during the COVID-19 pandemic: Evidence from the business formation statistics." Entrepreneurship and Innovation Policy and the Economy 1, no. 1 (2022): 9-42.

[7] Decker, Ryan, and John Haltiwanger. "Surging Business Formation in the Pandemic: Causes and Consequences." Brookings Papers on Economic Activity (2023): 3-24.

[8] Council of Economic Advisers. New Business Surge: Unveiling the Business Application Boom through an Analysis of Administrative Data (January 2024).

[9] Van Nostrand, Eric; Ashenfarb, Matthew. *The Inflation Reduction Act: A Place-Based Analysis.* (2023).

[10] This note uses data on self-employed workers from the Current Population Survey; for more detail on the self-employment classification, see Bureau of Labor Statistics: Concepts and Definitions (CPS).

[11] Federal Reserve Board, Survey of Consumer Finances, Business Equity by Race or Ethnicity (1989-2022).

[12] Goldman Sachs. U.S. Economics Analyst. *2025 Capex Outlook: A Gradual Rebound After the Factory-Building Boom* (Peng).

[13] *Id.*