TIE COALITION
Working Together for Tax Innovation Equality

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April 15, 2015

The Honorable Orrin Hatch
Chairman
Committee on Finance
United States Senate
Washington, DC 20510

The Honorable Ron Wyden
Ranking Member
Committee on Finance
United States Senate
Washington, DC 20510

The Honorable Rob Portman
Co-Chair International Working Group
Committee on Finance
United States Senate
Washington, DC 20510

The Honorable Charles Schumer
Co-Chair International Working Group
Committee on Finance
United States Senate
Washington, DC 20510

Dear Senators:

The Tax Innovation Equality (TIE) Coalition appreciates the opportunity to provide input to the Finance Committee's International Tax Working Group on how best to improve our nation's broken tax code.[1] The TIE Coalition supports comprehensive tax reform that will modernize the U.S. tax system and help American businesses compete in a global market. To that end, the TIE Coalition believes that the U.S. must: (i) implement a competitive territorial tax system; (ii) lower the U.S. corporate tax rate to a globally competitive level; and (iii) not pick winners and losers in the tax code by discriminating against any particular industry or type of income – including income from intangible property (IP).

Unfortunately, some of the past tax proposals would treat IP differently than other types of assets, creating an unfair advantage for companies who don't derive their income from IP, and significantly disadvantaging innovative U.S. companies, especially compared to their foreign competition. For example, the "Tax Reform Act of 2014" (H.R. 1) as introduced by former House Ways and Means Chairman Camp would seriously disadvantage innovative American companies. Under that proposal, Chairman Camp chose to use what is now widely known in the tax world as "Option C."[2] The problem with "Option C," is if it became the law of the land, it would significantly hinder U.S. companies who compete globally and it would result in more

[1] The TIE Coalition is comprised of leading American companies and trade associations that drive economic growth here at home and globally through innovative technology and biopharmaceutical products. For more information, please visit www.tiecoalition.com.

[2] Please note that the TIE Coalition is opposed to both versions of "Option C" (version one of "Option C" in the Camp Draft and version two of "Option C" in H.R. 1 as introduced).

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inversions of U.S companies. The TIE Coalition is *opposed* to "Option C" because it would have a devastating impact on both innovative technology companies and the nation's leading biopharmaceutical companies.

In an effort to really understand the full scope of "Option C," the TIE Coalition recently commissioned a study by Matthew Slaughter, the incoming Dean of the Tuck School of Business at Dartmouth University. We have attached a copy of the January 2015 study, entitled, "Why Tax Reform Should Support Intangible Property in the U.S. Economy," and urge the Finance Committee to consider its findings when examining options for international tax reform.

As the Slaughter study emphasizes, "Policymakers should understand the long-standing and increasingly important contributions that IP makes to American jobs and American standards of living – and should understand the value of a tax system that encourages the development of IP by American companies." The study finds that "Option C" in the Camp legislation would fundamentally change the measurement and tax treatment of IP income earned by American companies abroad. The study finds that "Option C" of the proposal would disadvantage IP income earned abroad by U.S. companies in three ways. First, it would tax IP income at a higher rate than under current law. Second, it would tax IP income more than other types of business income. Third, it would impose a higher tax burden on the IP income of U.S. companies compared to their foreign competitors. The result of using "Option C" as proposed in the Camp legislation is to increase corporate inversions and incentives for foreign acquisitions of U.S. based IP intensive companies.

According to the Slaughter study, since globally engaged U.S. companies have long performed the large majority of American's IP discovery and development, it is increasingly important to America's IP success that these companies operate profitably overseas. The Slaughter study finds that the "United States, not abroad, is where U.S. multinationals perform the large majority of their operations. Indeed, this U.S. concentration is especially pronounced for R&D, which reflects America's underlying strengths of skilled workers and legal protections such as IP rights that together are the foundation of America's IP strengths, as discussed earlier." The Slaughter study concludes that the overseas operations of these companies complement their U.S. activities and support, not reduce, the inventive efforts and related jobs of their U.S. parents.

IP jobs are very important to the U.S. economy and make up a larger portion of the workforce. That is why it is important to have a tax code that supports the IP economy here in the U.S. To that point, the U.S. Chamber's Global Intellectual Property Center commissioned a study on the benefits of IP jobs to economic growth in the U.S. The study found that in 2008-09 that there were 16% or 19.1 million direct IP jobs and 30% or 36.6 million indirect IP jobs. IP or IP

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related jobs accounts for 46% of the U.S. economy or 55.7 million jobs. With our modernizing economy it is likely that this number has grown not decreased.[3]

In an effort to be constructive and to help the Finance Committee find solutions that will help American companies succeed in a very competitive global market, the TIE Coalition has suggested possible anti-base erosion provisions that would not discriminate against any particular industry or type of income, including a modified "Option B" (with substance) or an "Option D" approach. We respectfully ask the Finance Committee to seriously consider these and other possible constructive alternatives to "Option C".

In conclusion, the TIE Coalition supports comprehensive tax reform that modernizes the U.S. tax system, allowing American businesses to compete in global markets in a manner that does not discriminate against any particular industry or type of income, including income from intangible property. At a time when many other countries are adopting tax rules to attract IP companies to their shores, it would be especially harmful to the U.S economy to adopt a tax policy that will hurt, not help, American companies who compete globally. Now is not the time to drive high paying American jobs overseas.[4]

We look forward to working with the Finance Committee in finding the correct solution to enhance American competiveness.

Sincerely,

Catherine T. Porter
Executive Director of the TIE Coalition

[3] See, http://image.uschamber.com/lib/fee913797d6303/m/1/IP+Creates+Jobs+-+Executive+Summary+Web+-+2013.pdf.
[4] The U.S. Chamber study found that "IP-intensive companies added more than $2.8 trillion direct output, accounting for more than 23% of total output in the private sector in 2008-09" and that the "Output per worker in IP-intensive companies averages $136,556 per worker, nearly 72.5% higher than the $79,163 national average. Id.

Why Tax Reform Should Support Intangible Property in the U.S. Economy

Matthew J. Slaughter

January 2015

About the Author

Matthew J. Slaughter is Associate Dean for Faculty and Signal Companies' Professor of Management at the Tuck School of Business at Dartmouth. He is also a Research Associate at the National Bureau of Economic Research, an adjunct Senior Fellow at the Council on Foreign Relations, and an academic advisor to the McKinsey Global Institute. From 2005 to 2007, he served as a Member of the President's Council of Economic Advisers.

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Executive Summary

America today continues to confront a competitiveness challenge of too little economic growth and too few good jobs. In the future America has the potential to create millions of good, knowledge-intensive jobs connected to the world via international trade and investment. Doing so will require sound U.S. policies that are based on a comprehensive understanding of how innovative American companies succeed in today's dynamic global economy.

In particular, policymakers should understand the long-standing and increasingly important contributions that intangible property (IP) makes to American jobs and American standards of living—and should understand the value of a tax system that encourages the development of IP by American companies. Unfortunately, the tax-reform proposals in former House Committee on Ways and Means Chairman Camp's Discussion Draft, the Tax Reform Act of 2014, would undermine these contributions. This white paper develops three central messages.

1. The Discussion Draft proposes sweeping changes to the U.S. tax treatment of IP. It would fundamentally alter the measurement and tax treatment of IP income earned by the foreign affiliates of U.S.-based multinational companies—and in so doing would discriminate against these affiliates' IP income relative to their non-IP income. Moreover, it would imperfectly measure this IP income—in many cases far too broadly. The bottom line is that the Discussion Draft would raise the current U.S. tax liability on IP income earned by the foreign affiliates of U.S.-based multinational companies—and thus would discourage these companies' investment in IP.

2. In three important ways, the Discussion Draft would disadvantage IP income earned abroad by U.S.-based multinationals. First, the U.S. tax burden on IP income would be higher than the tax burden on IP income under current law. Second, the U.S. tax burden on IP income would be higher than the tax treatment of many other forms of business income under the Discussion Draft. Third, the U.S. tax burden on IP income of U.S.-headquartered multinational companies would be higher relative to the tax burden on IP income of their foreign competitors as compared to current law. This would aggravate the nettlesome issue of corporate inversions and would create additional incentives for foreign acquisitions of U.S.-based IP-intensive companies.

3. Globally engaged U.S.-headquartered multinational companies, which create the large majority of America's IP, rely on their worldwide operations to maximize the creativity and benefits of their U.S. inventions. These globally engaged U.S. companies have long performed the large majority of America's IP discovery and development. Increasingly central to America's IP success is the ability of U.S. companies to operate profitably around the world. The latest research continues to show that the foreign-affiliate operations of U.S.-based multinationals complement their U.S. activities. Foreign affiliates support, not reduce, the inventive efforts and related jobs of their U.S. parents.

America's economic recovery remains too tentative and productivity growth has slowed dramatically in recent years. America stands to gain much from broad and fundamental policy reform that creates an internationally competitive tax system. But that reform should not discriminate against IP and its increasingly important contributions to the American economy.

Section One:
Overview of the Discussion Draft's Proposals for Reform of U.S. Tax Treatment of IP Income

The Discussion Draft would enact sweeping changes to U.S. tax treatment of IP. It would fundamentally alter the measurement and tax treatment of IP income earned by the foreign affiliates of U.S.-based multinational companies—and in so doing would discriminate against these affiliates' IP income relative to their non-IP income. Moreover, it would imperfectly measure this IP income—in many cases far too broadly. The bottom line is that the Draft would raise the current U.S. tax liability on IP income earned by the foreign affiliates of U.S.-based multinational companies—and thus would discourage these companies' investment in IP.

The Treatment of Intangible Income Under the Discussion Draft: Description of FBCII

In February 2014, Chairman of the House Committee on Ways and Means, Dave Camp (R-MI), introduced a Discussion Draft on comprehensive tax reform, the Tax Reform Act of 2014. This Discussion Draft proposed sweeping changes to America's taxation of both individuals and corporations overall—including current taxation of intangible income of U.S.-headquartered multinational companies.[1]

Under current law, when a foreign subsidiary of a U.S.-headquartered multinational earns income in a foreign jurisdiction, that income—regardless of whether related to tangible property or to intangible property (IP)—generally can be deferred and does not bear U.S. tax until the income is distributed to the U.S. parent. Thus, like other income, a foreign subsidiary's intangible income generally is not taxable in the United States so long as it is not repatriated back to the U.S. parent. Stated differently, a foreign subsidiary's intangible income is not currently subject to immediate taxation under Subpart F.[2]

When fully phased in over five years in 2019, the Discussion Draft would implement a statutory corporate tax rate of 25%, 10 percentage points below today's rate of 35%. In addition, it would effectively replace today's worldwide taxation of U.S.-based multinationals with a hybrid territorial system. The non-IP related foreign earnings of U.S.-based multinationals would enjoy a dividends-received deduction of 95%. This would result in an effective U.S. tax rate of just 1.25% on the non-IP related foreign-affiliate earnings repatriated back to U.S. parents through dividends.[3] Thus, the Discussion Draft would establish a baseline of largely exempting from U.S. taxation the non-IP related income of the foreign subsidiaries of U.S. multinationals.

The IP-related income of these foreign subsidiaries would be treated quite differently, however. Section 4211 of the Discussion Draft would create a new category of immediately taxable income, "foreign base company intangible income" (FBCII), and thus would replace today's deferral-based worldwide system with a pure worldwide system for IP-related income. Here is the definition:[4]

> FBCII would equal the excess of the foreign subsidiary's gross income over 10% of the foreign subsidiary's adjusted basis in depreciable tangible property (excluding income and property that are related to commodities).

In addition, the calculation of FBCII would also subtract from gross income an "applicable percentage" of the foreign affiliate's other "foreign base company income," or FBCI. Depreciable tangible property consists of physical assets used by the affiliate in the course of its production, such as office buildings and equipment. The adjusted basis on this tangible property would be determined each tax year in accordance with rules specified elsewhere in the tax code. The 10% applied to the adjusted basis in depreciable tangible property receives little explanation in the Discussion Draft or its technical explanation, beyond being described as "in effect exempting normal returns on investments in tangible property."

Consistent with current U.S. tax treatment of Subpart F income, this newly created FBCII would cause an immediate tax liability for a U.S. multinational. The effective tax rate applied to FBCII would vary depending on whether the goods and services linked to that FBCII were for use inside or outside of the United States.

For goods and services for use in the United States—e.g., for FBCII realized by a foreign affiliate exporting products back to customers in the United States—the effective tax rate on FBCII would ultimately be the Discussion Draft's statutory rate of 25%. This 25% tax rate on U.S.-connected foreign-affiliate IP earnings would be *20 times* the effective tax rate of 1.25% that the Discussion Draft would levy on non-IP related earnings of foreign affiliates.

For "foreign derived" FBCII related to goods and services intended for use outside the United States, the Discussion Draft would allow a deduction that, if enacted, would result in a lower effective tax rate. "The U.S. parent could claim a deduction equal to a percentage of the foreign subsidiary's FBCII that relates to property that is sold for use, consumption, or disposition outside the United States or to services that are provided outside the United States."[5] During the phase-in years, the amount of this deduction from FBCII would phase down in conjunction with the phase-in of the new lower statutory corporate tax rate, ultimately reaching 40% starting in 2019. This 40% deduction, if enacted, would imply a 15% effective tax rate on FBCII linked to foreign sales. A 15% tax rate on foreign-derived foreign-affiliate IP earnings would be *12 times* the effective tax rate of 1.25% that the Discussion Draft would levy on non-IP related earnings of foreign affiliates.[6]

This deduction would also be available to any U.S. corporation that earns foreign intangible income directly—e.g., through exports from the United States to a foreign customer—rather than through a foreign affiliate. Thus, a U.S. company—a purely domestic company or a U.S. parent of a U.S. multinational—would also face an effective tax rate of 15% (assuming the 40% deduction applies), rather than the baseline statutory rate of 25%, on intangible income linked to sales or services abroad.

This particular deduction, if enacted, results in an effective rate of 15% on intangible income from serving foreign markets regardless of the location of intangible property or whether it is earned by the foreign affiliate or by the U.S. parent. Chairman Camp therefore claimed that the Discussion Draft "removes incentives companies currently have to move their innovation offshore, by providing a neutral 15-percent tax rate on profits from innovations regardless of whether the manufacturing takes place in the United States or overseas."[7]

To avoid foreign affiliates facing double taxation of FBCII, their effective U.S. tax would be reduced for any affiliate whose FBCII first faced a tax liability to the host-country tax authorities: all foreign taxes on FBCII would be eligible for credit against the U.S. tax. FBCII would be taxable immediately in the U.S. only when that foreign effective tax rate was lower than the effective U.S. tax rate.

Relative to current law, which leaves untaxed by the U.S. any un-repatriated foreign-affiliate intangible income, the Discussion Draft would raise substantial amounts of U.S. tax revenues. This is mainly because it would treat all such FBCII as immediately taxable (subject to any foreign tax credits). The Joint Committee on Taxation estimated that this new FBCII, along with some related changes, would raise net U.S. tax revenues by $115.6 billion over the years of 2014 through 2023.[8]

The Discussion Draft Would Disadvantage the IP Income of Foreign Affiliates of Multinationals

Under Discussion Draft the IP income of foreign affiliates of U.S. multinationals (as calculated under the FBCII formula) would become immediately taxable income. This would mean foreign affiliates would face a higher rate of U.S. taxation on their IP income than they do today under current law. These affiliates may face some foreign tax liability on this IP income (a foreign tax liability that would tend to offset any U.S. tax liability). But today there is no U.S. tax liability until and unless that IP income is repatriated. Under the Discussion Draft, that IP income would face an immediate additional U.S. tax liability of up to 25%.

As described above, the effective tax rate on this FBCII is intended to be the statutory 25% for income linked to serving U.S. customers and 15% for income linked to serving foreign customers—the lower effective rate attainable only if the intended 40% deemed deduction of the calculated FBCII ends up enacted into law. *So, under the Discussion Draft, a foreign affiliate of a U.S.-headquartered multinational would face a U.S. tax rate on IP income somewhere between 12 and 20 times the effective tax rate of 1.25% that the Draft would levy on non-IP related earnings of that foreign affiliate.*

A fundamental problem with the overall structure of Discussion Draft is it would disadvantage IP income earned abroad by U.S.-based multinationals. The U.S. tax burden on IP income under the Draft would be higher compared with the tax burden on IP income under current law. And the U.S. tax burden on IP income under the Draft would be higher compared with the U.S. tax burden on many other forms of business income under the Draft. As Section Two of this paper will discuss, there is no economic rationale for discriminating against IP income. Indeed, as Section Three of this paper will discuss, IP has long driven the large majority of the productivity growth and job creation at the foundation of generations of American economic success—investment in which is complemented by the foreign affiliates of U.S. multinationals.

The Discussion Draft's policy preference for foreign affiliates intensive in the ownership and use of tangible property is underscored by the FBCII formula itself. The larger the adjusted basis in depreciable tangible property that a foreign affiliate owns, the smaller the affiliate's FBCII would be and thus its current U.S. tax liability (thanks to being able to subtract off 10% of the

adjusted basis). As Section 2 discusses, this preference would tend to dampen investment in tangible property in the United States by U.S.-based multinational companies.

Beyond this fundamental economic problem with the Discussion Draft's increased and uneven taxation of foreign-affiliate IP income, two other concerns with the design of FBCII merit mentioning: its formulary approach and its possible violation of World Trade Organization (WTO) obligations. Consider each of these in turn.

Using the formula of FBCII to measure IP-related income of foreign affiliates would constitute a radical departure from the current practice of defining and taxing income based on legal and market-based definitions that distinguish different sources and kinds of income based on the assets and/or the operations generating the income. This deviation has little precedent, either within the history of U.S. tax code or in terms of other countries' treatment of IP income.

This formulary approach to measuring IP income does promote administrative simplicity because it would not require companies to identify specific intangible assets or income flowing from those intangible assets. On this point, here are the words of House Ways and Means Committee Majority Counsel and Special Advisor for Tax Reform Ray Beeman.[9]

> We developed a formula that would apply to everybody. We could have gone in a direction where you created exact ways to measure embedded intangible income … The formula should be a lot simpler to apply … We are aware of and appreciate the fact that in service industries, there may be more of an effect … Now I think we have something that is probably not always going to perfectly measure intangible income, but it's far easier to use. It's a formula that basically measures the return on invested capital … an example where you see precision in measuring income at war with simplicity.

Simple though the administration of FBCII might be, as will be discussed below, conceptually it is only vaguely linked to IP and thus cannot capture and adjust for the complex variety of business models both within and across industries. This vague link is especially worrisome given today's reality of U.S.-based companies increasingly producing their goods and services in elaborate global supply networks dictated by their evolving business needs. And, it is essential to stress again, these measurement problems of FBCII sit in the broader context of the more-fundamental problem with FBCII discussed above; namely, that it discriminates against the IP that has long driven the large majority of the productivity growth and job creation at the foundation of generations of American economic success.

On measurement, it is also important to note there is no obvious economic rationale for setting this percentage at 10%, rather than at some other share. This chosen percentage is intended to be a "normal" return to tangible investments. But there is nothing inexorable about this 10%. In particular, there is no established research literature supporting its chosen constancy. Rather, it is well documented that different countries often have persistently different real interest rates because of different underlying fundamentals. Simple though a fixed rate of return of 10% might be, no standard economic theory or evidence supports its blanket application in FBCII.

The other design feature of the Discussion Draft's treatment of IP income that raises concerns is the possibility that it may not comply with the rules of the World Trade Organization (WTO). Recall the tax rate of 15% that the Draft aims to impose on IP income linked to foreign customers regardless of whether that foreign customer is served by a U.S. multinational's U.S. parent or foreign affiliate (again, assuming that the 40% deduction is applied to foreign-linked IP income). This means a U.S. company earning IP income from exports would pay a 15% tax rate. But IP income stemming from the imports by a U.S. customer from a foreign affiliate of a U.S. multinational would be subject to a 25% tax rate. Many WTO rules prohibit countries from subsidizing exports relative to imports. Thus have a number of analysts voiced concern about taxing income from imports at a higher rate than income from exports.

For example, scholar Reuven S. Avi-Yonah has commented that Section 4211 "translates into a 15% tax rate applied to rents from exports but a 25% rate on rents from imports, which raises serious WTO compatibility issues."[10] Similarly, "former Ways and Means staffer John Buckley previously argued that [a similar provision, Option C in the 2011 Camp international tax reform draft, which largely resembles the Discussion Draft's treatment of FBCII,] violated WTO agreements as a prohibited export-contingent subsidy."[11]

For over a decade the WTO has been struggling to close a successful Doha Development Round and to make progress on other important initiatives such as updating the original Information Technology Agreement. In this fragile trade-policy environment, a new U.S. violation of WTO rules would not help. And history clearly demonstrates that U.S. tax-related WTO violations can carry serious consequences—for example, when U.S. law regarding Foreign Sales Corporations was forced to be altered because of such violations.

Regardless of whether the higher tax rate on affiliates' exports to America would be WTO compliant, it clearly would impair the global competitiveness of these affiliates relative to foreign-headquartered companies exporting to America because under the Discussion Draft, foreign companies would face no FBCII tax. This anti-competitive implication of the Draft Section Two explores. For now, it also underscores a substantial concern about the Draft's practical implementation, to which this paper now turns: the challenges of measuring FBCII in today's complex reality of global supply networks.

Measuring FBCII Would Not Be Simple in Today's Complex Reality of Global Supply Networks

In today's era of rapidly expanding global supply networks, measuring FBCII by a simple formula would be only vaguely linked to IP conceptually and would not be adjustable for a complex variety of business models within and across industries. For example, in these networks global companies often choose not to own the physical assets involved in the production of their goods and services. It is critical to stress that favoring owned tangible assets in today's era of globalized production is a major conceptual mismatch of FBCII.

A distinguishing feature of the world economy over the past generation has been the fragmentation of production. Companies increasingly produce within elaborate global supply networks in which parts of final products are made by companies of all sizes, in many stages, spanning many countries, and linked together by knowledge, trade, and investment. How

companies produce their goods and services today differs dramatically from earlier generations, when companies made in-house most of the components and value of their products.

This proliferation of global supply networks is a striking and (barring catastrophe) irreversible feature of the world economy in which companies must operate to succeed. Three main forces account for their rise.

One has been widespread reductions in political barriers to trade, investment, and immigration. At the multilateral level, the Uruguay Round, in many ways the most comprehensive trade agreement ever, was implemented in the years after its 1994 closing. At the national level, a number of far-reaching unilateral, bilateral, and regional liberalizations have been implemented in the past generation, including the North American Free Trade Agreement in 1994 and China's accession to the World Trade Organization (WTO) in December 2001. At the industry level, the WTO Information Technology Agreement was signed in 1996, whereby 70 countries representing about 97% of world trade in IT products agreed to eliminate duties on hundreds of intermediates, capital goods and final products in the IT industry. Government restrictions on inward and outward foreign direct investment (FDI) have also fallen.

A second important force driving global supply networks has been the choice of many mainly labor-abundant countries to allow their billions of citizens to integrate into the global economy by lowering trade and investment barriers—rather than choosing to prevent globally engaged companies from competing in their markets, as so many countries did over much of the 20th century. Prominent here are the BRIC countries of Brazil, Russia, India, and China.

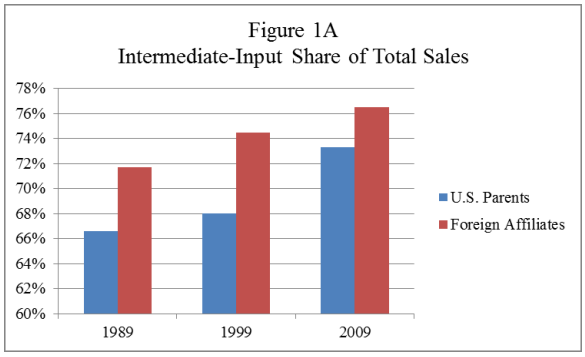
The third and perhaps most dramatic force driving global supply networks has been IT innovations that have driven to near zero the cost of global communication and information transmission. In the past generation, connectivity and communication facilitated by IT and the Internet have dramatically reduced the costs of trading many goods and, for services as discussed above, vastly expanding the scope of what activities are tradable.

This IT revolution has interacted with the first two forces. The conscious choice of so many countries to connect to the global economy, plus falling policy barriers to the international flow of ideas, people, capital and products, have opened to global companies dramatically more options for how to configure what they produce where. But in many ways it has been IT that has made these options both low-enough cost to do and also manageable despite this complexity.

The net result of these three forces has been a proliferation of global supply networks: elaborate and fluid structures in which companies locate different production tasks in different countries, some performed in-house and others with external partners. The productivity gains have been enormous: more innovation, lower costs, faster customer responsiveness and lower risks. The result for America (and others) is deeply globally engaged companies, each determining and building its strengths connected to the world to ensure continued success in keenly competitive world markets.

Publicly available data on U.S.-headquartered multinational companies shed clear light on how important global production networks are to them. Figure 1A provides one indicator of this. For

each of three years 1989, 1999 and 2009, it reports the share of total sales of U.S. parents and foreign affiliates of U.S.-headquartered multinational companies.[12]



The key message of Figure 1A is that the share of intermediate inputs (i.e., of goods and services that companies purchase from other companies to help produce their own goods and services) in total sales has been high and rising for both the U.S. and foreign operations of U.S.-based multinationals: from 66.6% in 1989 to 68.0% in 1999 and 73.3% in 2009 for U.S. parents and from 71.7% in 1989 to 74.5% in 1999 and 76.5% in 2009 for foreign affiliates. These high and rising shares reflect the deepening engagement of these companies in global supply networks.

Looking at different industries offers additional insight into the dynamic evolution of how these companies produce. Companies changing their positions in global supply networks sometimes switch primary industry—and this trend has increased over time as companies switch focus from goods to services. In the words of the U.S. Department of Commerce:

> The tendency for U.S. sellers of goods to shift their activities from manufacturing toward wholesale trade predates 1999, but it has been growing in importance. For example, the number of parent companies whose primary industry classification changed from manufacturing to wholesale trade in 1999-2009 more than doubled from the preceding 10-year period. The acceleration in this trend may be partly related to the rise of global value chains in firms' business strategies.[13]

This blurring of traditional distinctions between goods and services, not just across but even within companies, is a hallmark of global supply networks. These networks allow the production of goods to be unbundled into a collection of inputs that are not just goods but services as well —and conversely the production of services such as wholesale trade, may require supply chains of goods. Successful globally engaged companies must continually shift the blend of goods and services they produce and sell. Indeed, many of America's leading manufacturing companies make and sell services as an essential part of their overall operations. One recent study found that companies whose main business was *manufacturing* are among America's largest exporters and importers of *services* spanning R&D, business processing, and management consulting.[14]

The clear implication of the rise of complex global supply networks is that FBCII would be only vaguely linked to IP conceptually and would not be adjustable for the complex variety of business models within and across industries. This combination of features means FBCII likely would carry two unattractive features: (1) it would capture an unreasonably large fraction of current affiliate income, sharply reducing the Discussion Draft's stated goal of largely

exempting from U.S. taxation foreign-affiliate income; and (2) it would measure cross-industry variation that is only somewhat linked to common measures of industry IP intensity because of variation driven by different global-supply-network strategies of different companies.

Consider, for example, a labor-intensive foreign affiliate whose many employees work with capital goods that are leased from its main customer in making its products. Under the FBCII formula, because this affiliate owns little tangible capital it would have very little to subtract from its gross income—and thus would be measured as having high IP-related income regardless of the actual IP intensity (or lack thereof) of the underlying production activities.

More generally, companies that are more adept in situating themselves into the high-value-added positions of global supply networks will be companies that earn high profits whether or not those positions are in any way linked to IP assets. In some cases IP would be involved in a successful global production strategy, but surely not in all cases as there are a number of non-IP-related strategies that can yield profitability. High-quality customer service, for example—perhaps linked to products wisely tailored to local tastes—can generate high foreign-affiliate income regardless of any particular role for IP.

This problematic tendency of FBCII to measure income as IP-related when it actually is not has been identified by a number of analysts. Here, for example, is an excerpt from a Tax Notes International article that includes the thoughts of Peter Merrill of PWC.[15]

> Taxpayers in the services industry may not like the proposal much, particularly if they do not have significant amounts of depreciable property. Merrill pointed out that under the draft [Camp bill], a services firm could face a situation in which nearly all of its foreign income becomes FBCII. That result is contrary to the residual profit-split method used in transfer pricing, which gives a routine return for things like payroll and other factors of production before allocating residual profits. Merrill said the focus on depreciable property has implications for other types of industries, too. Banks, for example, have mostly non-depreciable assets would get no return on those assets under the formula, he said. Taxpayers who rent buildings and equipment abroad would have a huge incentive to buy them … Another complication would arise when a company has acquired another company that has already depreciated its assets and would therefore have no tangible returns to reduce the amount … attributed to intangible income.

In general, foreign affiliates with low profits—for whatever long-terms structural or short-term cyclical reasons—will have little or no FBCII. In contrast, foreign affiliates with large profits and/or little tangible property will have FBCII calculated to be very close to their total profits. In a world of constantly evolving global supply networks, only some of this variation in calculated FBCII will be driven by variation in IP-intensity. This less-than-tight correlation between calculated FBCII and IP-intensity is far from ideal.

These measurement concerns can be demonstrated using publicly available Bureau of Economic Analysis (BEA) data on the operations of majority-owned foreign affiliates of U.S.-headquartered multinational companies (see note 12). Figure 1B below uses these BEA data for

the most recent year available, 2012, to approximate the formulaic calculation of FBCII of these foreign affiliates, both for all industries together and for a number of particular industries.

To estimate FBCII, the formula's "gross income" is approximated using the BEA's measure of net income.[16] The formula's "depreciable tangible property" is approximated using the BEA's measure of net property, plant, and equipment (PPE) assets—i.e., the book value of these PPE assets net of accumulated depreciation charges. The Discussion Draft may intend to include other types of tangible property, but PPE are clearly an important part of this concept. Finally, the publicly available BEA data do not contain sufficient detail to adjust FBCII for the other "foreign base company income;" this may result in a slight over-estimate of FBCII. The six industries in Figure 1B highlighted with an asterisk are, as Section 3 will discuss, on many measures among America's most IP-intensive. One is software; the other five are part of manufacturing: pharmaceuticals, machinery, computers, electrical equipment, and transportation.

Figure 1B: Estimated FBCII for U.S.-Multinational Affiliates, 2012

Industry Group	Net Income ($M)	Net PPE Assets ($M)	Calculated FBCII	FBCII Share of NI
All Industries	1,062,817	1,283,875	934,430	87.9%
Manufacturing	176,714	399,922	136,722	77.4%
Pharmaceuticals*	42,376	28,089	39,567	93.4%
Machinery*	13,252	22,417	11,010	83.1%
Computers*	36,428	46,456	31,782	87.2%
Electrical Equipment*	5,366	8,043	4,562	85.0%
Transporation Equip.*	1,915	50,028	-3,088	-161.2%
Software*	14,633	3,128	14,320	97.9%
Retail Trade	8,991	63,392	2,652	29.5%
Wholesale Trade	69,593	45,727	65,020	93.4%
Finance and Insurance	93,665	37,127	89,952	96.0%

There are two important points from the analysis in Figure 1B. First, FBCII would seem to encompass the very large share of total foreign-affiliate net income of not just IP-intensive industries but of many other industries as well. For all industries this share is estimated to be 87.9%. For five of the six IP-intensive industries in Figure 1B this share exceeds 80%--and for two, pharmaceuticals and software, it exceeds 90%. The only other such estimate of FBCII to date, by Martin Sullivan, uses IRS data but reaches a very similar conclusion: his estimates from 2008 IRS data conclude that for all industries 79% of total earnings and profits of foreign subsidiaries would be considered FBCII.[17]

Whether such breadth of scope was intended when creating FBCII, in light of the above discussion of global supply networks this share seems implausibly high. To attribute to IP assets about or over 80% of all foreign-affiliate earnings misses the many other reasons for success such as high-quality products, responsive customer service, and efficient links to input suppliers. It seems to border on tautological to consider advantages of IP as encompassing all the many competitive advantages firms develop and deploy. Indeed, these FBCII calculations might more broadly call into question the notion that the Discussion Draft creates a near-territorial tax system for the United States. If upwards of 87.9% of all foreign-affiliate income is immediately taxable as Subpart F FBCII at rates of at least 15%, then only 12.1% of foreign-affiliate income would

be left eligible for territorial treatment. It is doubtful such a regime would be more territorial than today's worldwide-plus-deferral regime.

The second important message of Figure 1B is the insensitivity of FBCII calculations to legitimate variation in business strategies and environments unrelated to IP—even among those industries that scholarship shows are IP-intensive.

To see this, compare transportation equipment to pharmaceuticals and software. Transportation equipment has nearly twice the PPE assets of pharmaceuticals and over ten times that of software, which at least partly reflects the obvious difference in production technologies among the sectors. Building planes, trains, and automobiles requires massive amounts of sophisticated equipment and buildings. And the underlying demand dynamics often differ among these sectors. Much of the personal and business demand for transportation equipment is very sensitive to business-cycle conditions such as overall GDP growth, employment, and consumer confidence—conditions that in 2012 remained sluggish and fragile in regions such as the Europe. Demand for pharmaceuticals and software, in contrast, is often much less cyclically sensitive.

For these economic reasons, it is not surprising that 2012 net income in transportation equipment was so much lower than in pharmaceuticals and software. But the FBCII formula does not account for these economic differences in any way—and thus implies a vastly different tax liability for the two sectors. Pharmaceuticals and software face an FBCII estimated to be 93.4% and 97.9% of each's overall net income, respectively. But transportation equipment, because it earned so little net income and owned so many tangible assets, has *negative* FBCII.

Other IP-intensive businesses in Figure 1B resemble pharmaceuticals and software. Electrical equipment, for example, has been widely studied as having some of the world's most elaborate global supply networks in which participating companies tend to occupy relatively narrow spaces within the networks and contract heavily with partners for key intermediate inputs and even for renting shared production capacity. Thus it is not surprising how it, too, looks asset-light and has FBCII at a high 85% share of net income.

Surely some of the estimated FBCII for affiliates in pharmaceuticals, software, and electrical equipment is surely connected to their IP. But some of it is not, and the FBCII methodology would allow no way to distinguish these underlying causes. Regardless, of all this calculated FBCII would face an immediate U.S. tax liability of between 15% and 25%—i.e., between 12 and 20 times the effective tax rate of 1.25% that the Discussion Draft would levy on non-IP related earnings of foreign affiliates.

It is important to stress that, with the continued expansion of global supply networks, foreign affiliates increasingly operate for global distribution, which includes exporting goods and services to the United States—either to U.S. parents or to purely domestic unrelated U.S. companies. This increasingly important dimension of global supply networks means that over time, a rising fraction of the FBCII calculated in Figure 1B would, under the Discussion Draft, face an immediate tax liability of 25% rather than just 15% (as discussed earlier in this section).

Figure 1C demonstrates this point. For the four most recent years of BEA data, the figure reports for majority-owned foreign affiliates their exports to the United States of goods (exports of services are tracked by BEA only infrequently); their total manufacturing sales, as a proxy for goods sales; and the share of these U.S. exports in affiliates' total manufacturing sales.

Figure 1C: Rising U.S.-Export Intensity of Foreign Affiliates

Year	Goods Exports to U.S. ($ Billion)	Manufacturing Sales ($ Billion)	Export Share
2009	258.1	2,029.4	12.7%
2010	292.6	2,228.6	13.1%
2011	345.3	2,570.2	13.4%
2012	346.4	2,525.2	13.7%

The key message of Figure 1C is the steadily rising share of foreign affiliates' goods production that is exported to the United States: from 12.7% in 2009 to 13.7% in 2012. This rising share accords with the substantial body of research that has documented the spread of global supply networks.[18] Indeed, much of what affiliates are exporting to America are today intermediate inputs essential in the production of goods and services made in America. In recent years, over 60% of America's goods imports were intermediate inputs that were used in America with American workers, capital and know-how.[19] To succeed in global supply networks increasingly requires U.S. companies to import as well as export. "Made in America" increasingly hinges on creative new ways to make goods and services in conjunction with the world—including in conjunction with the foreign affiliates of U.S.-based multinationals. Yet under the Discussion Draft, the FBCII of these foreign affiliates connected to exports back to America and other ways of serving U.S. customers will face an immediate tax liability of 25%—versus just the effective tax rate of 1.25% that the Draft would levy on non-IP related earnings of foreign affiliates.

Whether taxed at a rate of 15% or 25%, Figures 1B and 1C together make clear that the tax base of foreign-affiliate FBCII income would be very large: hundreds of billions of dollars in 2012 alone. Again, the U.S. parents of these foreign affiliates would pay a U.S. tax only above and beyond whatever foreign taxes these affiliates would first pay. But the result would be a minimum effective tax on all foreign-affiliate income treated as FBCII, with any foreign tax rate below 15% (or 25%) on FBCII topped up to at least 15% (or 25%) for the U.S. owners.

For these reasons the Joint Tax Committee forecasts that the Draft "increases the U.S. taxation of income derived from intangibles owned or licensed by a CFC."[20] This tax increase would be large. JCT has estimated that this new Subpart F FBCII, along with some related changes to Subpart F income, would raise U.S. tax revenues by $115.6 billion over the years of 2014 through 2023.

The Discussion Draft's tax treatment of IP-intensive activities of multinational companies would be very discriminatory relative to all other activities. The IP-related income of foreign-affiliates would lose current-law deferral without any offsetting territoriality and thus would be subject to a minimum tax rate of between 15% and 25%--between 12 and 20 times the effective tax rate of 1.25% that the Discussion Draft would levy on non-IP related income of foreign subsidiaries.

Section Two:
Three Ways In Which the Discussion Draft Would Disadvantage the Foreign-Affiliate IP Income of American Companies

In three important ways, the Discussion Draft would disadvantage IP income earned abroad by U.S.-based multinationals. First, the U.S. tax burden on IP income under the Draft would be higher compared with the tax burden on IP income under current law. Second, the U.S. tax burden on IP income under the Draft would be higher compared with the U.S. tax burden on many other forms of business income under the Draft. Third, the U.S. tax burden on IP income of U.S.-headquartered multinational companies would be higher relative to the IP income of their foreign competitors under the Draft compared with under current law. This third aspect, in particular, would aggravate the already nettlesome issue of corporate inversions dominating much recent U.S. tax discussion and would further encourage the foreign acquisition of U.S.-headquartered IP-intensive firms.

Section 1 focused on the mechanics of Foreign Base Company Intangible Income (FBCII) under the Discussion Draft. The analysis highlighted important problems, taking as a given the current structure of operations of U.S.-headquartered multinational companies. Section 2 broadens the focus to analyze the strategic choices that multinational companies intensive in intangible property (IP) would face under the Discussion Draft. For these IP-intensive multinational companies, three different strategic trade-offs are important to consider:

1. The U.S. tax burden on foreign-affiliate IP income under the Draft compared with the tax burden on foreign-affiliate IP income under current law.
2. The U.S. tax burden on foreign-affiliate IP income under the Draft compared with the U.S. tax burden on other forms of foreign-affiliate business income under the Draft.
3. The U.S. tax burden on foreign-affiliate IP income of U.S.-headquartered multinational companies relative to the IP income of their foreign competitors under the Draft compared with under current law.

The central message of this section is that the U.S. tax burden on foreign-affiliate IP income under the Discussion Draft is higher in all three comparisons: relative to current law, relative to other business activities under the Draft, and relative to foreign competitors under the Draft. From all three of these perspectives, U.S.-headquartered multinational companies will be disadvantaged by the treatment of foreign-affiliate IP income under the Discussion Draft.

Comparing Foreign-Affiliate IP Income Under the Discussion Draft Versus Under Current Law

Under current law, income related to IP that is earned by a foreign subsidiary of a U.S.-headquartered multinational can be deferred and is not a taxable event until distributed to the U.S. parent. Thus, a foreign subsidiary's intangible income is not taxable in the United States so long as it is not repatriated back to the U.S. parent. Stated differently, that foreign subsidiary's IP income is not considered part of immediately taxable income.

The Discussion Draft would exempt from U.S. taxation most of the non-IP income of the foreign subsidiaries of U.S. multinationals, by establishing a dividends-received deduction of 95% on the

foreign earnings of U.S.-based multinationals. This would result in an effective U.S. tax rate of just 1.25% on the non-IP related foreign-affiliate earnings repatriated back to U.S. parents through dividends. The intangible income of these foreign subsidiaries would be treated quite differently, however. Section 4211 of the Discussion Draft would create a new category of immediately taxable income, FBCII, creating a worldwide tax base (without deferral) for IP-related income at an effective rate of either 15% or 25%—12 to 20 times more than the 1.25% effective tax rate on non-IP income of these subsidiaries.

In a Discussion Draft world, U.S.-based multinational companies would thus realize a smaller after-tax rate of return on IP investments relative to today's world because the incremental U.S. tax liability on that income would be realized much earlier in time. This higher taxation on IP income would, all else being equal, reduce the incentives of U.S.-based multinationals to invest in IP assets because of this lower after-tax rate of return. Indeed, JCT analysis of the economic impacts of the Discussion Draft finds that lower investment rates in IP—presumably through channels such as lower R&D spending—would, along with the loss of accelerated depreciation, contribute to a slightly smaller U.S. capital stock under the Draft than under current law. "Overall, the proposal is expected to increase the cost of capital for domestic firms, thus reducing the incentive for investment in domestic capital stock."[21]

The bottom line here is that the higher U.S. tax liability on foreign-affiliate IP income under the Discussion Draft would induce U.S.-headquartered multinational companies to undertake less IP investment than they would under current law—e.g., less R&D spending and less other forms of knowledge discovery. As Section Three of this paper will discuss, IP has long driven the large majority of the productivity growth at the foundation of generations of American economic success—investment in which is complemented by the foreign affiliates of U.S. multinationals.

Comparing Foreign-Affiliate IP Income Under the Discussion Draft Versus Other Business Activities Under the Discussion Draft

A second important perspective to consider is the U.S. tax burden on foreign-affiliate IP income under compared with the U.S. tax burden on all other forms of business income, both under the Discussion Draft. Here, three important points merit stressing.

First, economic theory clearly implies that pre-tax rates of return on IP investments should be higher than rates of return on investments in most tangible properties. This is because of the inherent riskiness of new-knowledge discovery: the uncertain prospects of cutting-edge innovations means the returns to successful discoveries should be and are high to compensate for their increased riskiness. Yet, because the intent of FBCII is to implement an immediate U.S. tax liability on foreign-affiliate IP income but not on income from other less-risky assets and activities, in practice the Discussion Draft would dull the economic incentive that induces companies to undertake risky investments in knowledge discovery.

Second, some companies in IP-intensive industries may be less intensive in physical capital—e.g., property and equipment—than will other, more-traditional industries. Of course the optimal blend of knowledge and human capital in operations varies widely across companies—as was

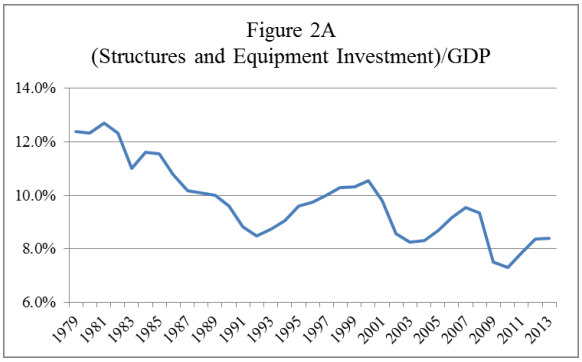
discussed in Section 1 in the context of measuring FBCII in an era of global supply networks—but some highly innovative firms do not use much tangible capital.

Third, evolving global supply networks mean that many globally engaged companies connect with foreign partners to help them produce and distribute their knowledge-intensive products in ways that do not require ownership abroad of a great deal of depreciable tangible assets. Section 1 discussed this important consideration in greater detail.

The net implication of these three business-strategy and economic considerations is that the calculation of FBCII will likely mean a greater share of foreign-affiliate income will be subject to immediate incremental U.S. tax for IP-intensive multinationals than will be the case for multinationals concentrated on other, more-traditional business activities. And, this calculated IP income of foreign affiliates will be taxed at much higher rates than the non-IP income of these foreign affiliates: at rates of 15% up to 25%, in contrast to just 1.25%. Incentives matter, and all of these considerations will tend to reduce the after-tax rate of return on U.S. multinationals' investments in IP assets—and thus will induce these multinationals to invest less in IP assets and more in non-IP assets.

For foreign affiliates, this skewing of business decisions away from IP might take a number of forms. The tax-induced value of owning tangible assets by foreign affiliates might compel multinationals to buy rather than lease tangible assets—e.g., to purchase an office building where employees work rather than simply leasing space in that building—purely for tax reasons rather than for more-fundamental business-competitiveness reasons.

This skewing of business decisions away from IP might also compel U.S.-based multinationals to invest in tangible assets in their foreign affiliates rather than in their U.S. parent operations. Creating incentives to invest in physical capital abroad, not in America, would never make wise economic policy. But it would be especially unwelcome today given Figure 2A. For each year since 1980, Figure 2A reports America's total investment in non-residential structures and equipment as a share of U.S. GDP (gross domestic product, the value of all newly produced goods and services).[22]



The key message of Figure 2A is that investment in the United States in business equipment and structures as a share of GDP has been falling for decades. Except for the increase in this share over much of the 1990s driven by the IT revolution and the resulting accelerated investment in IT capital goods, the share has fallen from a bit above 12% around 1980 to only about 8% in

recent years. Indeed, slow growth in capital investment is one reason for the sluggish U.S. economic recovery from the Great Recession. Tax policies that incentivize U.S.-headquartered multinationals to invest in physical capital outside America without any underlying economic or strategic rationale to do so—multinationals that, as Section 3 will document, in 2012 accounted for 43.3% of all the U.S. investment in Figure 2A—would be especially unwelcome today, for reasons including the fact that such investment tends to spur job creation.

Tax distortions that disfavor one line of business relative to others are precisely what tax reform should avoid. The U.S. tax code should not induce U.S.-headquartered companies to migrate away from IP investments because, as Section 3 will discuss, IP has long been central to U.S. economic strength. Tax reform should not discriminate against any particular business activity—especially not IP creation and development. Yet the Discussion Draft would do just that: by raising the U.S. tax burden on foreign-affiliate IP income compared with the U.S. tax burden on many other forms of foreign-affiliate business income.

The Discussion Draft Would Undermine the International Competitiveness of IP-Intensive U.S. Multinationals

A third important perspective to consider is the U.S. tax burden on IP income of U.S.-headquartered multinational companies relative to the IP income of their foreign competitors. Suppose an IP-intensive U.S.-headquartered multinational competes in world markets against another IP-intensive multinational headquartered in a territorial country. Suppose further that in some third market these two companies earn the same pre-tax income and thus face the same (if any) third-market tax liability. Under current law, the U.S. company faces an incremental U.S. tax liability that its foreign competitor does not—but this U.S. tax liability can be deferred by not repatriating these foreign earnings. So, under current U.S. law of worldwide taxation plus the possibility of deferral, the U.S. company can structure its operations to compete evenly in terms of not facing any immediate U.S. tax liability.

Under the Discussion Draft, the situation would be markedly different. The U.S. multinational would face an immediate tax liability—at least 15% and as high as 25%—on the FBCII calculated for its foreign affiliate. As shown in Section 1, for most affiliates their taxable FBCII will likely constitute the large majority of their net income. Because FBCII would apply only to U.S.-based companies, the territorial-based foreign competitor would face no such new tax liability. Thus the Discussion Draft would disadvantage U.S. IP-intensive companies against the rest of the world's IP-intensive companies. The short-term and long-term distortions of this tax disadvantage created by FBCII are many.

Start with the simple math of cash flows. All else being equal, U.S.-headquartered multinationals would have smaller after-tax cash flows from which to fund their R&D efforts to discover and develop new IP. This plus the reduced after-tax return on any IP investments would, as discussed earlier in this section, reduce the total amount of U.S. IP investment. Seen relative to other countries, this would also tend to mean more IP innovation being done abroad in foreign-headquartered global companies that would not face this FBCII tax burden—all at a time where, as Section 3 discusses, it is well documented that America's predominance in the world's IP production has long ago passed.

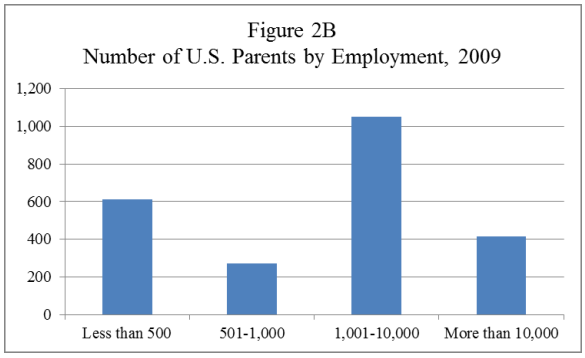
The differential after-tax cash flows would also mean that foreign-based companies would tend to outbid U.S.-based companies for other IP assets around the world, such as inventive new companies. This foreign-company bidding advantage may be especially salient in many IP-intensive industries in America in which start-ups play a central creative role. Under the Discussion Draft, these American start-up companies and/or their IP assets would be more likely to be purchased by foreign companies.

Over time, the FBCII disadvantage facing U.S.-based IP-intensive companies would make them more vulnerable to acquisition by their foreign-based competitors: at least to acquisition of their foreign affiliates, and in many cases to acquisition of their U.S. operations as well. Indeed, the already nettlesome issue of corporate inversions—in which the merger of a U.S. and foreign company results in a company domiciled outside America—would be aggravated for U.S.-headquartered IP-intensive firms. Under current law, today many of these U.S. companies already can realize tax savings on future foreign-affiliate earnings if incorporated outside of America. For many IP-intensive companies that would face certain U.S. taxation on their FBCII under the Discussion Draft, the tax advantages would be even stronger either of being acquired by a larger foreign company or of acquiring a smaller foreign company and inverting.

There is one other important dimension on which the Discussion Draft would disadvantage U.S.-based IP-intensive companies: it would undermine the likelihood of new IP-intensive companies being founded in America. The same logic by which the Discussion Draft would disadvantage existing U.S.-based IP-intensive multinationals against their foreign counterparts would be a force compelling new IP-intensive companies to be established abroad rather than in the U.S. This new tax burden on U.S. start-ups would come at a time when U.S. start-up rates have already been falling.

Research has long documented that young startup companies are a key source of U.S. innovation dynamism. Younger, smaller firms tend to produce more innovations per dollar of innovation effort than do many older, larger companies. This innovation edge stems from a number of impediments facing many older and larger companies: worries about innovation disrupting existing lines of business; more-rigid bureaucracies that inhibit new ideas; and weaker individual incentives connected to innovation success.[23] (Of course, U.S.-based multinational companies tend to contradict this overall pattern; as documented in Section 3, they are among America's most dynamic and innovative companies—thus their ability to succeed globally, an ability that would be impaired by tax reform as envisioned by the Discussion Draft.)

Tax policy that disadvantages the returns to IP income will be tax policy that inhibits the start-up of new IP-intensive companies in America. Lest one think from the above discussion that all globally competitive U.S. companies are monolithically large and old, that is not the case. By virtue of having operations outside America, in scope and in aspiration all U.S.-based multinationals are expansive. Yet, there are striking differences in their size in terms of common metrics such as employment and sales. Figure 2B documents this wide range: For the most recent year of data available, 2009, it splits the 2,347 U.S.-based multinational companies into four groups categorized by the number of U.S.-parent employees.[24]



At one end of the spectrum, 415 companies each employ more than 10,000 people in America — indeed, an average of 43,630 workers each. At the other end of the spectrum, nearly 50% more multinationals, 613, each employ fewer than 500 people in America — and thus, as this report later discusses, fit the U.S. government definition of being a small or medium-sized enterprise (SME). Many of these SME multinationals are likely dynamic, fast-growth companies that were recently "born" into the group of U.S.-based multinationals by establishing their first foreign affiliate. Many of America's largest and most successful companies today once started small, with the quintessential person pursuing a dream from a garage or dorm room.

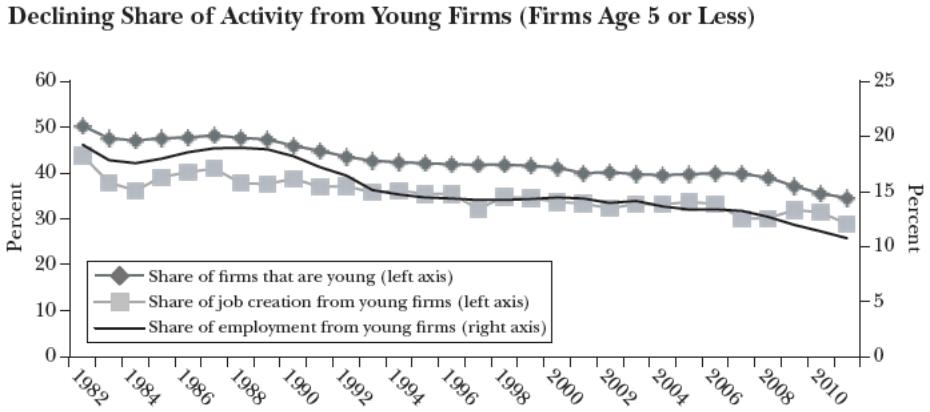
The fact that today 26.1% of U.S. multinationals are SMEs speaks to how diverse these important companies truly are. Many small multinationals dream of growing much bigger tomorrow. For those that are IP-intensive, tax disadvantaging IP income through the Discussion Draft would make achieving these dreams harder.

There is clear international evidence that tax burdens inhibit entrepreneurship. A recent study spanning 85 countries over decades estimated the drag of corporate taxes on entrepreneurship (measured either as new business establishments and also the rate of new-business registration). It found that a 10-percentage point increase in corporate tax rates reduces the rate of new-business startups by an average of 1.4 percentage points, which is 17.5% below the average startup rate of about 8%. This study also found that a similar increase in corporate taxes reduces a country's ratio of capital investment to GDP by a sizable 2-2.5 percentage points.

And it is important to recognize that America today is already facing an ongoing, worrisome decline in the rate of new-business start-ups. In the early-to-mid 1980s, each year about 12% to 13% of all U.S. firms were newly started that year. Starting in the late 1980s, however, this startup rate began to decline. This decline long pre-dates the World Financial Crisis, but its pace has quickened recently such that today only about 7% to 8% of all U.S. companies are startups.

A consequence of this drop in the rate of new-business startups is that the share of the overall U.S. economy—in terms of the number of companies or where people work—accounted for by young firms has been steadily declining. Figure 2C, reproduced from a recent publication on waning U.S. economic dynamism, shows this.[25]

Figure 2C: The Falling Share of Start-Ups in the U.S. Economy



Defining young firms as those aged five or less, in the early 1980s nearly 50% of all U.S. companies were young. Today that share is down to only about 39%—the lowest on record—with falls across all states. Similarly, the share of U.S. employment at these young firms has fallen from about 19% in the early 1980s to barely 10% today. And the share of job creation each year accounted for by these young firms has also been sliding: from over 40% in the early 1980s to only about 30% today.[26]

Taken together, ebbing startup trends indicate the United States is becoming less entrepreneurial. It has a much lower rate of new-business startups and thus a much smaller share of new firms in the overall private sector. The underlying causes at play are not fully known. That said, this development should worry policymakers. Given the historical importance of startups in many IP-intensive industries, tax disadvantaging IP income through tax reform as envisioned by the Discussion Draft would dampen innovation in IP-startups and reduce the number of such start-ups arising in the United States. And compounding this dampening, high-talent individuals might accordingly be more inclined to seek employment with foreign-based rather than U.S.-based companies.

The U.S. tax burden on foreign-affiliate IP income under the Discussion Draft would be higher in three important comparisons: relative to current law, relative to other business activities under the Draft, and relative to foreign competitors under the Draft. From all three of these perspectives, U.S.-headquartered multinational companies would be disadvantaged by the treatment of foreign-affiliate IP income under the Discussion Draft. This legislation would thus induce U.S.-headquartered multinationals to invest less in new ideas and innovation, to invest more in non-IP assets, to make those non-IP investments outside America rather than inside, and to be acquired by a larger foreign company or to acquire a smaller foreign company and invert. It would advantage foreign-headquartered multinationals not subject to its worldwide taxation in bidding for IP assets around the world, and it would discourage the start-up of new IP-intensive companies in America.

Section Three:
How IP Innovation
Strengthens the U.S. Economy

Globally engaged U.S. companies, which create the large majority of America's IP, increasingly rely on their worldwide operations to maximize the creativity and benefits of their U.S. inventions. Globally engaged U.S. companies have long performed the large majority of America's IP discovery and development. Increasingly central to America's IP success is the ability of U.S. companies to deploy their IP abroad—especially in light of the worrisome recent slowdown in U.S. productivity growth.

Intangible property (IP) has long played a central role in driving growth in U.S. output, jobs, and income—and this role will be even more important in the years ahead.

The Past: The Massive Contribution of Innovation and IP to America's Economy

Since the founding of the American republic, IP has played a central role in driving growth in U.S. output, jobs, and income. This central economic fact of knowledge discovery and development via innovation has been widely established by academic and policy research in recent decades, and it is widely recognized by leaders in business, in government, and beyond. For example, here is an opening of a recent White House report on innovation in America.

> The history of the American economy is one of enormous progress associated with remarkable innovation … Innovation—the process by which individuals and organizations generate new ideas and put them into practice—is the foundation of American economic growth and national competitiveness. Economic growth in advanced countries like the United States is driven by the creation of new and better ways of producing goods and services, a process that triggers new and productive investments.[27]

Here is a similar statement on the centrality of IP to America's economic growth and overall success from a recent landmark study by the U.S. government of IP and the U.S. economy that focused on a subset of IP: patents, copyrights, and trademarks, or "intellectual property."

> Innovation, the process through which new ideas are generated and put into commercial practice, is a key force behind U.S. economic growth and national competitiveness … Innovation protected by intellectual property rights is key to creating new jobs and new exports. Innovation has a positive pervasive effect on the entire economy, and its benefits flow both upstream and downstream to every sector of the U.S. economy. Intellectual property is not just the final product of workers and companies—every job in some way, produces, supplies, consumes, or relies on innovation, creativity, and commercial distinctiveness.[28]

IP created through innovation has been the foundation of America's economic strength. Over the arc of American economic history, many innovations have been incremental—slight refinements of products and processes that better served companies' customers. Other

innovations have been truly disruptive and transformational, creating entire new industries and jobs—often while simultaneously displacing existing companies, jobs, and technologies.

The cumulative economic benefit of IP developed via innovation—indeed, the cumulative impact on the average standard of living of a country's citizens is best expressed in terms of productivity: the average value of output of goods and services a country produces per worker. The following quotation from Nobel laureate Paul Krugman concisely makes this point that is widely acknowledged by leading economists of all political persuasions.

> Productivity isn't everything, but in the long run it is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker … the essential arithmetic says that long-term growth in living standards … depends almost entirely on productivity growth.[29]

The economics of this "essential arithmetic" for why productivity matters is very simple. The more and better quality goods and services people produce—that is, the more productive they are—the more income they receive and the more they can consume. Higher productivity means a higher standard of living.

How can a country raise its productivity? There are two basic means. One is to save and invest to accumulate the other inputs people work with to produce things. The most important other input needed is the tangible capital discussed earlier in this report, broadly defined as goods and services that help people make other goods and services—e.g., buildings, machinery, and software.

The second way to raise productivity is to improve the technological know-how for transforming inputs into outputs thanks to innovation. New products and processes allow workers to make new and/or more goods and services. What makes innovation so potentially powerful for productivity is that many ideas don't depreciate with extensive use (unlike, e.g., capital goods). Thus, the more ideas a country has today, the easier it is to produce additional ideas tomorrow.

So, what do the data say has driven America's rising productivity—and thus average standards of living—over the generations? A large body of academic and policy research has found that the overwhelming majority of America's growth in productivity and living standards over the 20th century was driven by new IP and the resulting technological advances of new products and processes, not by tangible capital.

Robert Solow, in seminal work that ended up being a major reason for being awarded the Nobel Prize in economics, calculated that the very large majority of U.S. growth during the first half of the 20th century was driven by innovation and technological progress. Of the rise in real GDP per person-hour in the United States from 1909 to 1949, he concluded that "It is possible to argue that about one-eighth of the total increase is traceable to increased capital per man hour, and the remaining seven-eighths to technical change."[30] Looking at the second half of the 20th century, an authoritative study found that for growth in U.S. per capita GDP from 1950 to 1993, 80% was accounted for by greater discovery and development of innovative ideas fostered by the combination of rising educational attainment and rising R&D effort.[31]

And looking at the most recent period of strong U.S. productivity growth that ran for a decade several years starting around 1995, the majority of that growth was driven by faster technological innovation in information-technology (IT)—one of the most IP-intensive industries. Post-1995, technical change has accounted for well over half of U.S. per capita GDP growth.[32]

Substantial research has found that IP and innovation matter because the social benefits of knowledge often exceed its private benefits—in the jargon of economics, discovery of ideas generates "positive externalities" through several channels (such as worker mobility, and the more-general property that ideas, different from nearly all goods and services, are easily shared). Studies have found that the social return to R&D tends to be at least double the private return.[33]

Public policies that help foster and protect IP and innovation have long been an essential ingredient to America's overall economic success. "Strong protection of intellectual property rights, business-friendly bankruptcy laws, a flexible labor force, and an entrepreneurial culture and legal system that favor risk taking and tolerate failure are among the framework conditions that have kept the U.S. at the forefront of innovation. Another crucial American advantage has been its openness to foreigners"—especially because of immigration's contribution to the talent, such as engineers and scientists, that discover, develop, and implement IP.[34]

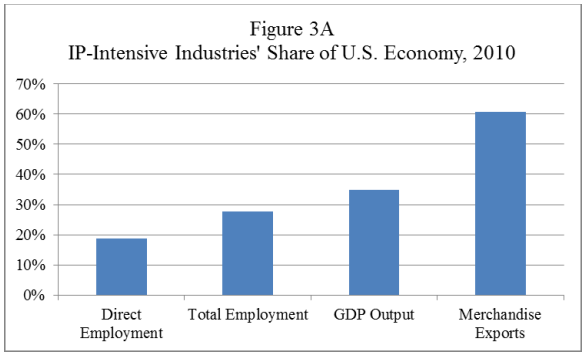
Substantial academic and policy research has demonstrated how appropriate public policies have fostered America's innovation strength—especially when compared to other countries that are far less innovative. "Differences in levels of economic success across countries are driven primarily by the institutions and government policies (or *infrastructure*) that frame the economic environment in which people produce and transact. Societies with secure physical and intellectual property rights that encourage production [capital accumulation, skill acquisition, invention, and technology transfer] are successful."[35] And one important policy that shapes America's overall innovation environment is its tax treatment of IP.

The Present: The Strength of IP-Intensive Industries in America's Economy Today

IP's central role in driving growth in output, jobs, and income for the overall U.S. economy can perhaps best be seen at the level of individual companies and industries. Examples of innovative companies achieving great success thanks to their IP abound in the public lore: e.g., companies born in the garages of Silicon Valley (sometimes literally, other times proverbially) that grow into global leaders in technology and many other IP-intensive industries. These examples are clearly borne out in more-systematic research. Companies that produce more IP tend to be more successful on several dimensions including profitability, revenues, and employment.[36] Looking more broadly, entire new industries such as biotechnology and software have been created by new IP—new industries that, as explained above, have boosted national output, created jobs, and raised standards of living.

The U.S. Department of Commerce recently undertook a landmark study aiming both to identify IP-intensive industries and to document their productivity-leading characteristics and the overall economy. Drawing on records and resources such as the USPTO, this study identified 75 industries (out of 313 total) that produce large amounts of IP measured by the three forms of IP-

protection that entail government-granted or government-recognized legal rights: patents,[37] copyrights,[38] and trademarks.[39] These industries were collectively defined to be "IP-intensive." Figure 3A reports their share of several key dimensions of U.S. economic activity in 2010.



The key message of Figure 3A is that America's IP-intensive industries perform large shares of America's economic activities that together support high and rising standards of living.

- *Employment*: IP-intensive industries directly employed 27.1 million jobs, 18.8% of total U.S. jobs (counting payroll jobs plus the self-employed and also unpaid family workers). IP-intensive industries supported an additional 12.9 million jobs indirectly through their supply-chain intermediate-input purchases of goods and services needed to make IP-intensive products. So, IP-intensive industries supported a total of 40.0 million U.S. jobs, 27.7% of the national total. If anything, this jobs tally is conservative because it does not examine indirect jobs downstream, e.g., in distribution and trade of IP-intensive products.
- *Output*: IP-intensive industries produced 34.8% of all U.S. output (measured in terms of GDP)—nearly $5.1 trillion.
- *Exports:* IP-intensive industries exported $775 billion of merchandise to the rest of the world. This constituted 60.7% of total U.S. goods exports. From 2000 to 2010, IP-intensive exports expanded by 52.6%.

For workers in IP-intensive industries, the bottom line of all these productivity-enhancing activities has been high and rising earnings. In 2010, average weekly wages in IP-intensive industries were 42% above that of other industries ($1,156 versus $815). This IP compensation premium has been growing over time: from 22% in 1990 and 38% in 2000 to 42% in 2010.[40]

Part of this compensation premium is explained by the higher average talent of workers in IP-intensive industries. 42.4% of workers aged 25 and older in IP-intensive industries had a bachelor's degree or higher—versus just 33.2% in the private sector. IP-intensive demand is commensurately lower for those with some college or an associate degree (27.4% vs. 27.7%), for high-school graduates (25.2% vs. 28.9%), and for high-school dropouts (5.0% vs. 9.2%).

The contributions to the U.S. economy of IP-intensive industries looks strong not only in and of itself, as indicated above, but also in relation to other countries as well. In recent years the United States remains the world's largest producer of many IP-intensive goods and services: in 2010, $3.6 trillion of knowledge-intensive services and $386 billion in high-technology manufactures, according to estimates by the U.S. National Science Foundation.[41]

The Future: Signs that America's IP Strength Is Waning

Despite America's historic strength in creating IP and transforming IP innovations into new products, companies, industries, and jobs, concern is rising among leaders in both the private and public sectors that America's IP strength is waning.

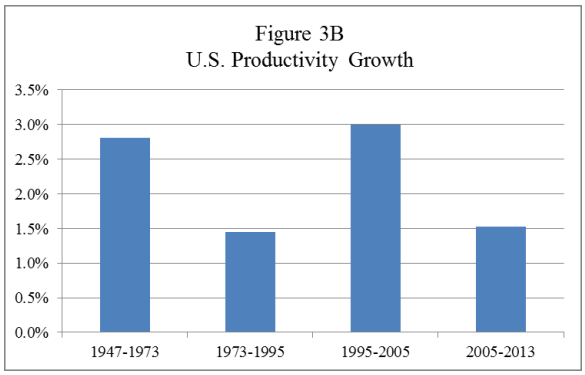
Perhaps the most alarming case for America's waning innovation strength has been made by the 2007 initial and 2010 follow-up *Gathering Storm* reports—alarming, not alarmist, because of the breadth of data brought to bear in this pair of studies for the National Academies of Sciences and Engineering by a distinguished committee comprised of leading academics, university presidents, CEOs of global firms, and Nobel laureates.

> It is widely agreed that addressing America's competitiveness challenge is an undertaking that will require many years if not decades … a primary driver of the future economy and concomitant job creation will be *innovation* … So where does America stand relative to its position of five years ago when the *Gathering Storm* report was prepared? The unanimous view of the committee members participating in the preparation of this report is that our nation's outlook has worsened … The only promising avenue, in the view of the *Gathering Storm* committee and many others, is through *innovation*. Fortunately, this nation has in the past demonstrated considerable prowess in this regard. Unfortunately, it has increasingly placed shackles on that prowess such that, if not relieved, the nation's ability to provide financially and personally rewarding jobs for its own citizens can be expected to decline at an accelerating pace … The *Gathering Storm* Committee's overall conclusion is that … the outlook for America to compete for quality jobs has further deteriorated over the past five years. The *Gathering Storm* increasingly appears to be a Category 5.[42]

The sobering message of this gathering-storm metaphor has been widely repeated: "America cannot rest on its laurels. Unfortunately, there are disturbing signs that America's innovative performance slipped substantially during the past decade. Across a range of innovation metrics … our nation has fallen in global innovation-ranked competitiveness."[43] Several studies using many indicators and methodologies continue to reach the same startling conclusion: America's overall innovativeness, though still high, is falling—in many ways at a rapid rate.[44]

- The World Economic Forum's 2014-2015 rankings have U.S. "Total Competitiveness" at #3, down from #1 two cycles ago, and down to #5 in the "Innovation" category.
- For 2012, the World Intellectual Property Organization (in conjunction with the business school INSEAD) ranks the United States at #10 in its Global Innovation Index—down from #1 in 2009.
- In 2009, the Information Technology and Innovation Foundation ranked 44 countries and regions on 16 core indicators of innovation capacity. The United States ranked #4. This was down from America's #1 ranking based on 1999 data. But when assessing the rates of change in innovation capacity during 2000-2009 (that is, the rate of improvement on these 16 indicators), the United States ranked #43—ahead of only Italy. On this rate-of-improvement metric, China ranked #1.

Consistent with these studies of weakening U.S. innovativeness are the data on America's slowing productivity growth. Figure 3B documents this productivity slowdown. For each of four post-World War II periods, Figure 1.1 reports two items: the average annual rates of growth in productivity (output per worker hour) in the U.S. non-farm business sector, and the average U.S. unemployment rate during that period.[45]



The first period in Figure 3B, 1947 to 1973, was marked by a strong average annual rate of productivity growth of 2.81%. During this period American companies across many industries were dynamic world leaders, thanks in part to their emerging connections to the world economy rebuilding in the wake of World War II devastation. The 1973-1995 period, however, saw average productivity growth plummet to just 1.45% per year. The initial causes of this slowdown included two major oil-price shocks and high and volatile inflation. Its persistence came to concern scholars, policymakers, and business leaders alike. With productivity growth averaging 1.45% per year average standards of living need 48 years to double—far slower than the 25 years needed when productivity growth was averaging 2.81% each year. Unemployment was painfully high in many years of this generation, averaging nearly 7% throughout.

Then came a productivity renaissance. For the decade starting with 1995, U.S. productivity growth unexpectedly accelerated—to an average annual rate of 3.00%. This surge was widely visible in accelerated growth in U.S. GDP, jobs, and worker earnings. At one point in 2000, U.S. unemployment dipped to just 3.9%, and for several years during this period real earnings rose briskly for all U.S. workers—even less-skilled workers including high-school dropouts. These large economic gains spread even to the U.S. government, for which unexpected surges in personal and business tax receipts led to federal-budget surpluses in the four years 1998 through 2001. A large body of scholarship has analyzed this U.S. productivity acceleration and has found that much of it was related to one particular IP-intensive industry: IT.

But since 2005, U.S. productivity growth has slowed dramatically. It has averaged just 1.53% in the past several years, a rate back to nearly the levels of the "lost generation" of 1973-1995. And even within this period productivity growth has been slowing even more: at annual rates of just 0.5% in 2011, 1.5% in 2012, and 0.5% in 2013. *Several leading scholars are now forecasting that U.S. innovativeness and productivity growth may be permanently lower*. Indeed, one such scholar has recently forecast that, in contrast to the average growth in U.S. GDP per capita of the past 150 years of about 1.9%, "future growth in consumption per capita for the bottom 99% of the income distribution could fall below 0.5% per year for an extended period of decades."[46]

This productivity slump is feared to continue not just by leading scholars but, increasingly, by many important policy-making agencies as well. In its most recent update to its 2014-2024 economic outlook in August 2014, the U.S. Congressional Budget Office foresees average annual growth in potential U.S. labor productivity of just 1.5%. Because of a similarly guarded outlook on U.S. productivity, the most recent September 2014 forecasts of the members of the Federal Open Market Committee foresee beyond 2018 annual U.S. GDP growth of somewhere between 1.8% and 2.5%.[47]

What explains America's darkening IP and productivity outlook? Part of the cause is America's waning investment in its innovation inputs—the people and resources dedicated to knowledge discovery and development. The pair of *Gathering Storm* reports cited above gather a wave of sobering evidence on America's declining IP investments—both relative to America of the past and relative to more and more other countries of today.

At one level, the growth in innovation investments around the world presents a tremendous opportunity for America—to, if supported by the right public policies, connect its innovation efforts with those of the world. Indeed, the surge in global innovation investments has transformed how new ideas are discovered and developed—now much more across borders rather than just within. "The innovation process can no longer be confined within geographic boundaries. Globalization has ushered in a swiftly evolving new paradigm of borderless collaboration among researchers, developers, institutions, and companies spanning the world." This new global norm for discovering and developing IP is clearly evident in at the micro-level of patents, article writing, and other individual building blocks of IP. One prominent study examined nearly 20 million academic papers and over two million patents over 50 years and across all major disciplines "to demonstrate that teams increasingly dominate solo authors in the production of knowledge."[48]

At another level, however, whether America can benefit from the rising IP strength around the world will depend on whether America can continue to design and implement public policies that maintain America's IP strengths in this rapidly changing innovation world. It is possible that America will succeed in this way, but success is by no means guaranteed. The assessment of many private and public leaders is that America's position is precarious—in large part because U.S. policies across a wide range of areas, including tax policy, do not adequately reflect today's globally-competitive reality. A recent report by a distinguished panel of government, business, and academic leaders framed the innovation challenge thus.

> At the same time that the rest of the world is investing aggressively to advance its innovation capacity, the pillars of America's innovation system are in peril … It is not just policies directly addressing the development and deployment of new technologies but also policies concerning tax, trade, intellectual property, education and training, and immigration, among others that play a role in innovation … In this dramatically more competitive world, the United States cannot return to a path of sustainably strong growth, much less maintain global leadership, by living off past investments and its capacity for innovation … Nor can the U.S. compete on the basis of a policy approach that is the legacy of an era when American advantages were overwhelming and innovative activity tended to

> remain within our borders … The U.S. has every opportunity to secure its economic leadership and national security well into the future. But it will require a fresh policy approach, one that ensures that the United States can compete, cooperate, and prosper in this new world of competitive innovation.[49]

Whether America can restore its innovation strength will depend largely on whether America can craft IP-supporting public policies that reflect the competitive global economy of today—not the world economy of much of the 20th century when America was largely unrivaled in IP. That time of American predominance has passed. Today calls for policies—including tax policies—that reflect the reality how America's IP-intensive companies and industries actually operate in the 21st century global economy. To this reality we now turn.

America's Most Innovative, IP-Intensive Companies Tend To Be Multinational Companies

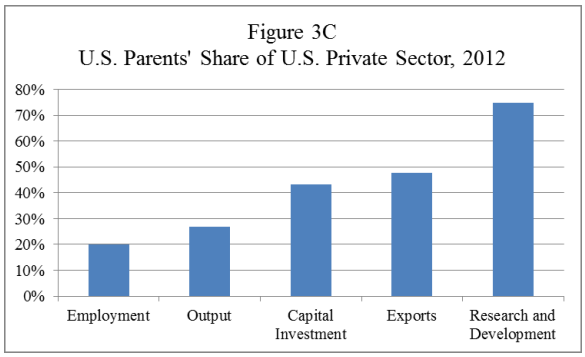
What do we know about the relationship between the IP, innovation, and productivity performance of companies and their global engagement?

Start with the following first important fact: there is now a large body of evidence for many countries that plants and/or firms exhibit large and persistent differences in innovativeness and productivity.[50] A second important fact that researchers have documented in recent years is a robust correlation between productivity and global engagement: plants and/or firms that export or, even more so, are part of a multinational enterprise tend to have higher productivity—and a bundle of other good-performance characteristics, such as innovative intensity and wages—than their purely domestic counterparts.[51]

Multinational companies are an important segment of globally engaged companies. *Multinational companies tend to exhibit even higher productivity than just exporters or importers do, and thus tend to appear at the very top of the productivity distribution of firms. They also tend to be very trade-intensive, capital-intensive, innovation-intensive, and high-wage not just relative to purely domestic companies but also just exporters and importers.*[52]

The superior performance of U.S. parents of U.S.-headquartered multinational companies is shown in Figure 3C, which reports the share of important activities in the overall U.S. private sector accounted for by the U.S. parent operations of U.S.-headquartered multinationals in 2012, the most recent year of available data.[53]

Figure 3C
U.S. Parents' Share of U.S. Private Sector, 2012



The parent operations of U.S.-headquartered global companies perform large shares of America's productivity-enhancing activities—capital investment, international trade, and R&D—that create tens of millions of well-paying jobs for their American workers.

- *Output*: Parent companies produced 26.8% of all private-sector output (measured in terms of GDP)—over $3.2 trillion.
- *Capital Investment:* Parent companies purchased $584.4 billion in new property, plant and equipment—43.3% of all private-sector capital investment.
- *Exports:* Parent companies exported $728.1 billion of goods to the rest of the world. This constituted 47.7% of the U.S. total.
- *R&D:* To discover and develop new products and processes, parent companies performed $220.3 billion of R&D. This was a remarkable 74.9% of the total R&D performed by all U.S. companies.

All these innovative activities contribute to millions of well-paying jobs in America. In 2012, U.S. parent companies employed more than 23.1 million U.S. workers, 20.0% of total private-sector payroll employment. Total compensation at U.S. parents was $1.77 trillion —a per-worker average of $76,538, over a quarter above the average in the rest of the private sector.

Moreover, the important contribution of U.S. parent operations to the overall U.S. economy has been quite stable for decades. In 1988, for example, U.S. parents' R&D spending was 72.5% of the economy-wide private-sector totals—not much above the 2010 share of 68.8%. This stability over time demonstrates their ongoing contributions to the overall U.S. economy.

The important fact that globally engaged companies—exporters, importers, and especially multinationals—exhibit higher innovativeness and productivity than do purely domestic companies begs the question about causation. Do high-productivity companies tend to become globally engaged? Or does global engagement trigger productivity gains? The answer is, "some of both."

First, there is clear evidence that high-innovation, high-productivity companies tend to select into being globally engaged—and, if particularly productive, being a multinational company.[54] This resonates with much of the discussion above. More-innovative companies tend to be able to crack into foreign markets—and they also want to do so to boost returns on their IP investments.

Second, there is also clear evidence that global engagement spurs the productivity performance of companies. Some of the most comprehensive research on this issue has been conducted by the McKinsey Global Institute, which over the past generation has examined thousands of firms and industries. A repeated finding is that exposure to "global best-practice firms" via trade and FDI stimulates firm productivity. A clear statement of this globalization-to-productivity link appears in the work of Nobel laureate Robert Solow.

> A main conclusion of the studies … has been that when an industry is exposed to the world's best practice, it is forced to increase its own productivity … The more a given industry is exposed to the world's best practice high productivity industry, the higher is its relative productivity (the closer it is to the leader). Competition with the productivity leader encourages higher productivity.[55]

This integration into the world economy boosts productivity in companies through many channels. One is the competitive pressure to reduce costs via innovating processes, creating or shifting firm scope towards new products, and becoming more capital intensive. Another is the spread of knowledge by learning from customers, suppliers, and competitors.

It is also important to stress that global engagement boosts industry-level productivity by spurring the reallocation of workers, capital, and other resources from struggling companies to more-productive innovators—often exporters and multinationals. As discussed in Section II, countries boost average productivity by reallocating resources across industries. Recent research has documented a very important second dimension of resource-reallocation gains: within all industries—regardless of the pattern of exports and imports—across companies towards the higher-productivity, globally engaged firms. An important part of this industry-level resource allocation is the contraction of low-productivity firms, along with the faster expansion of firms already engaged in international trade and investment. This reallocation from low- to high-productivity firms as a result of trade liberalization raises average industry productivity, a process that has been documented for the United States and for many other countries as well.

In addition to having very high productivity levels, for decades globally engaged U.S. companies have played an outsized role in driving aggregate U.S. productivity growth. This is the key finding of an important recent study that focused on productivity growth "because, even though studies of [multinational] performance based on microeconomic data have tended to identify effects on the *level* of productivity, if these underlying productivity-enhancing effects are spreading and/or filtering in over time, productivity aggregates will be affected in terms of growth rates (as well as levels)." Their results they rightly describe as "quite striking."

> Although the MNC [multinational corporation] sector accounts for only 40% of the output of nonfinancial corporations (NFCs) between 1977 and 2000, MNCs appear to have accounted for *more than three-fourths* of the increase in NFC labor productivity over this period. Moreover, MNCs account for *all* of the NFC sector's pickup in labor productivity in the late 1990s; accordingly, they account for *more than half* of the much-studied acceleration in aggregate productivity. And, while MNCs involved in the production of IT contributed significantly toward this acceleration, MNCs in other manufacturing and nonmanufacturing industries contributed significantly as well.[56]

Foreign Activity by IP-Intensive Companies Complements, not Substitutes for, U.S. IP Investment

How exactly are American IP-investment and employment affected by the global reach discussed above? It is important to understand that U.S. IP jobs and investments are created not only by exporting to foreign markets but also by producing and selling in them through FDI in foreign affiliates. Contrary to what is often presumed, expansion abroad by globally engaged U.S. companies tends to complement, not substitute for, their domestic activity.

The link between exports and American jobs is clear. When companies in America gain new customers abroad for their goods and services, meeting this demand creates new American jobs

in these companies. Because of the rich variety of goods and services America exports and the rich variety of production methods used by companies in America, the link from exports to jobs varies across companies, industries, and time. That said, research has documented the many ways in which exporting companies tend to be stronger than nonexporters.

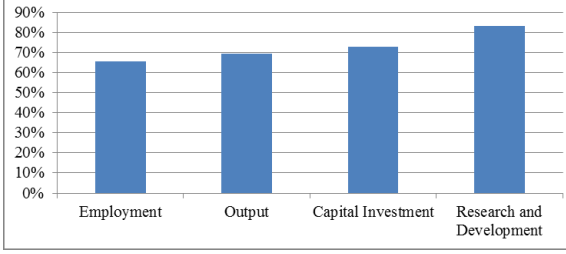
Less well understood is the link between jobs and IP investment in America and business growth abroad. Much of the public policy discussion surrounding U.S. multinationals assumes that engagement abroad necessarily substitutes for U.S. activity—in particular, for employment and R&D investment. This substitution concern misses the several channels through which the global engagement of U.S. multinationals tends to support, not reduce, their operations in America. As studies presented below have found, foreign-affiliate activity tends to complement, not substitute for, key parent activities in the United States. Three crucial features of how multinationals work that belie the substitution idea are complementarity, scale and scope.

- For some given level of firm-wide output, when firms employ many kinds of workers and many non-labor factors of production, affiliate and parent labor can often be complements in which more hiring abroad also means more hiring in the United States. Complementarity is quite common in global production networks, in which U.S. workers operate not in isolation but rather in close collaboration with colleagues around the world.
- When affiliates are expanding abroad to boost their revenues, the resulting reduction in costs and boost in profits (thanks to greater scale and richer returns on IP) often spurs higher output in the company around the world, which can mean more U.S. hiring.
- Affiliate expansion often not only boosts firm scale but also, as discussed previously, refines the mix of activities performed across parents and affiliates. U.S. parents' employment can rise as they shift their scope into higher value-added tasks—especially R&D and other IP investments.

The concern that global expansion tends to hollow out U.S. operations is not supported by the facts of existing research—now presented below. Rather, the scale and scope of U.S. parent activities increasingly depends on their successful presence abroad.

To see this, start with the often-heard claim that globally engaged U.S. companies have somehow hollowed out their U.S. operations, leaving only activity abroad. Is that true? What about the magnitude of U.S. parent activities relative to the scale of their foreign affiliates? Figure 3D reports the share of U.S. multinationals' 2012 worldwide employment, output, capital investment, and R&D that was accounted for by their U.S. parent operations.[57]

Figure 3D
U.S. Parents' Share of Worldwide Activity, 2012



The key message of Figure 3D is that *the worldwide operations of U.S. multinational companies are highly concentrated in America in their U.S. parents, not abroad in their foreign affiliates*.

- *Employment*: U.S. parents account for 65.6% of worldwide employment of U.S. multinationals—23.1 million parent workers versus 12.1 million at affiliates. This translates into a ratio of nearly two U.S. employees for every one affiliate employee.
- *Output*: U.S. parents account for 69.6% of worldwide output (in terms of value added) of U.S. multinationals—over $3.2 trillion versus about $1.4 trillion.
- *Capital Investment:* U.S. parents undertake 72.7% of worldwide capital investment by U.S. multinationals—$584.4 billion versus $219.8 billion. For every $1 in affiliate capital expenditures, parents invested $2.66 worth in the United States.
- *R&D:* U.S. parents perform 83.2% of worldwide R&D by U.S. multinationals—$220.3 billion versus $44.6 billion, or $4.94 in parent innovation and knowledge discovery and development for every $1 by affiliates.

The United States, not abroad, is where U.S. multinationals perform the large majority of their operations. Indeed, this U.S. concentration is especially pronounced for R&D, which reflects America's underlying strengths of skilled workers and legal protections such as IP rights that together are the foundation of America's IP strengths, as discussed earlier.

This much larger scale of U.S. parents than foreign affiliates has been present for decades. A generation ago, the share of U.S. parents in the worldwide activity of U.S. multinationals was slightly higher. In 1988, U.S. parents accounted for 78.8% of U.S. multinationals' worldwide employment and 79.2% of their worldwide capital investment. So over the past generation, the foreign-affiliate shares of employment and investment have risen by about 0.5 percentage points per year. As this report documented above, however, this rise has been driven mainly by ongoing expansion of parents that was outpaced by even faster expansion of affiliates, not by parent contraction. Faster affiliate expansion, in turn, has been driven mainly by faster economic growth abroad and thus faster growth in customers there.

The bottom line is that the United States firmly remains where globally engaged U.S. companies locate the majority of their operations—especially their innovation activities—even as they have been growing more quickly abroad.

What does the evidence show about the key question of complementarity: has that foreign expansion complemented or substituted for their U.S. activities? Aggregate, industry and company-level research to date shows that foreign-affiliate expansion tends to complement U.S. parent employment, investment, sales—and innovation efforts via R&D.

One such recent study examined industry-level data for 58 U.S. manufacturing industries from 2000 through 2007. It found that the productivity gains and cost savings from expanding global production networks tended to boost overall U.S. employment in these industries—albeit with changes in the scope of U.S. activities being performed. Similar studies to this one have repeatedly found that when American manufacturing industries invest more abroad, this outward investment stimulates U.S. exports.[58]

Another study examined industry-level data for dozens of U.S.-based multinational companies in services over recent decades. It found that greater foreign-affiliate employment and sales correlated with greater U.S.-parent employment as well, consistent with the idea that affiliate and parent activity tend to, on net, complement each other.[59]

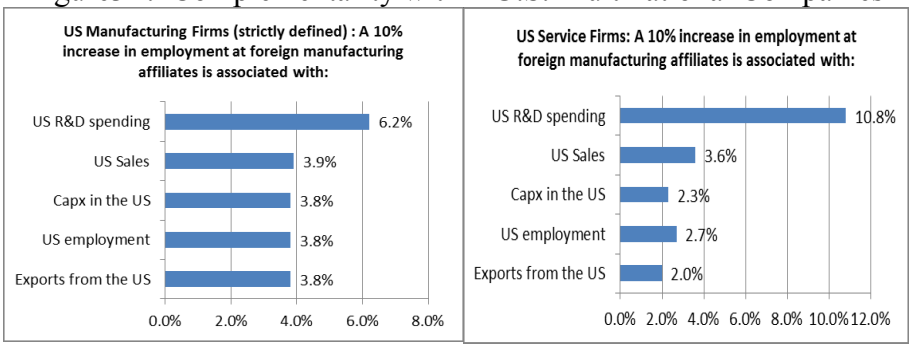
A third important study, conducted at the level of individual companies, carefully analyzed all U.S. multinationals in manufacturing from 1982 to 2004. It found that a 10% increase in foreign-affiliate capital investment causes a 2.6% increase, on average, in that affiliate's U.S. parent capital investment. It similarly found that a 10% increase in foreign-affiliate employee compensation causes a 3.7% increase, on average, in that affiliate's U.S. parent employee compensation. These links were clearest when analyzing the changes in affiliate jobs and investment driven by changes in affiliate sales.

Their findings of complementarity were especially compelling for how U.S.-parent R&D is supported by foreign-affiliate sales. They found that 10% faster sales growth in foreign affiliates raises U.S.-parent R&D spending by somewhere between 3.2% and 5.0%. The authors concluded, "Since foreign operations stand to benefit from intangible assets developed by R&D spending, it is not surprising that greater foreign investment might stimulate additional spending on R&D in the United States … These results do not support the popular notion that expansions abroad reduce a [multinational] firm's domestic activity, instead suggesting the opposite."[60]

A fourth important study also examined individual companies, but this time European-based multinationals. It linked within these multinationals the employment and patenting activity of these companies' inventors across both parent and affiliate countries, to enable them to ascertain the effect of companies' expanding use of researchers abroad on their use of researchers at home. Contrary to the common presumption that foreign researchers will substitute for parent researchers, this study found the opposite: "Our main result suggests that a 10% increase in the number of inventors abroad results in a 1.9% increase in the number of inventors at home."[61]

One final important study also examined individual U.S. multinational companies—not just in manufacturing but also in services, and for the generation 1990 through 2009. As with the above earlier study of U.S. multinationals, this very recent analysis also found consistent and strong evidence that expansion abroad by foreign affiliates tends to expand, not contract the activities of these affiliates' U.S. parents. Figure 3E, taken from this study, summarizes its key findings.[62]

Figure3E: Complementarity within U.S. Multinational Companies



For U.S. parent companies in manufacturing as well as U.S. parent companies in services, expanded foreign-affiliate employment is associated with economically and statistically significant increases in parent employment, capital investment, output, exports, and—most of all—R&D expenditures. This latter correlation is especially notable here: expanding foreign affiliates trigger more, not less, parent efforts to discover IP and other such innovations.

All of the strengths of the U.S.-headquartered multinational companies at the heart of America's IP-intensive industries would be curtailed, not supported, by tax policy that discriminates against the IP income of the foreign affiliates of these companies.

The clear conclusion from research to date is that, on average, foreign affiliates and U.S. parents expand together—driven by the dynamism of complementarity, scale and scope. In particular, foreign-affiliate growth tends to stimulate, not reduce, U.S.-parent IP investments. In the current environment of sharply slower productivity growth, America now more than ever needs policies that support, not constrain, the dynamic energies of its most innovative companies. Tax reform that penalizes IP income and activity is precisely the wrong policy direction for helping America reaccelerate economic growth through innovation and the resulting growth in U.S. jobs and incomes.

Conclusions

Intangible property has long played a central role in driving growth in U.S. output, jobs, and incomes. Discovering and developing ideas with value boosts output in existing companies and industries and creates entire new industries. This innovation has long created new jobs and higher standards of living for all American workers and their families.

Maintaining IP's many contributions to the U.S. economy will require smarter public policy now and in the future, however, given the breadth of indicators that America's innovation strength is waning. In particular, policymakers must understand the value of a tax system that does not discriminate against the IP performed by American companies.

Such a tax system needs to recognize the global nature of America's IP innovators. U.S.-headquartered multinational companies, which create the large majority of America's IP, increasingly rely on their global operations to maximize the creativity and benefits of their U.S. inventions. These globally engaged U.S. companies have long performed the large majority of America's IP discovery and development. Increasingly central to America's IP success is the ability of its multinational companies to deploy that IP abroad. Connecting foreign customers with U.S. ideas tends to complement, not substitute for, American IP investments—both in terms of the quantity and the quality of U.S. innovation.

The potential is great for American IP activity to connect with global markets. Tax policy should support, not inhibit, this potential. Unfortunately, the tax-reform proposals in the Discussion Draft would undermine this potential. The Discussion Draft would fundamentally shift the measurement and tax treatment of IP income earned by the foreign affiliates of U.S.-based multinational companies—and in so doing would discriminate against these affiliates' IP income relative to their non-IP income.

The U.S. tax burden on foreign-affiliate IP income under the Discussion Draft would be higher in three important comparisons: relative to current law, relative to other business activities under the Draft, and relative to foreign competitors under Draft. From all three of these perspectives, U.S.-headquartered multinational companies would be disadvantaged by the treatment of foreign-affiliate IP income—and thus would be discouraged from investing in IP.

This legislation would incentivize U.S.-headquartered multinationals to invest less in new ideas and innovation, to invest more in non-IP assets, to make those non-IP investments outside America rather than inside, and to be acquired by a larger foreign company or to acquire a smaller foreign company and invert. It would advantage foreign-headquartered multinationals not subject to its worldwide taxation in bidding for IP assets around the world, and it would discourage the start-up of new IP-intensive companies in America.

America stands much to gain from broad and fundamental policy reform to create an internationally competitive tax system. But that reform should not discriminate against IP and its increasingly important contributions to the U.S. economy of growth, good jobs, and opportunity.

ENDNOTES

[1] At the end of the 113th Congress, the Discussion Draft of Chairman Camp was formally introduced as HR 1, The Tax Reform Act of 2014. At the time of writing in early 2015, the 114th Congress showed no indications of reviving this bill.

[2] The Internal Revenue Service defines intangible property to include the following six broad sets of ideas and related economic manifestation thereof: "computer software; patents, inventions, formulae, processes, designs, patterns, trade secrets, or know-how; copyrights and literary, musical, or artistic compositions; trademarks, trade names, or brand names; franchises, licenses, or contracts; methods, programs, systems, procedures, campaigns, surveys, studies, forecasts, estimates, customer lists, or technical data." See this definition and related discussion at http://www.irs.gov/irm/part4/irm_04-048-005.html. This paper follows this definition of intangible property.

[3] The tax rate of 25% applied to the non-deductible 5% of foreign-affiliate non-IP related earnings results in an effective tax rate on those earnings of just 1.25% (5% multiplied by 25%).

[4] *Tax Reform Act of 2014 Discussion Draft*, Committee on Ways and Means Majority Tax Staff, pp. 149-150. House Ways and Means Committee Majority Counsel and Special Advisor for Tax Reform Ray Beeman later clarified that FBCII would likely include royalties, after initial uncertainty arose on this. "I don't believe we meant to exclude royalties because that is where we started in the process … That's definitely something we will want to go back and evaluate."

[5] *Tax Reform Act of 2014 Discussion Draft*, Committee on Ways and Means Majority Tax Staff, p. 150.

[6] Suppose a foreign affiliate earns FBCII of 100 through sales to host-country customers. Then against its FBCII it can claim a deduction of 40 (i.e., of 40% of 100) and thus face a deduction-included FBCII of just 60. A statutory 25% tax on this 60 yields 15; thus would the effective tax rate on FBCII linked to foreign sales be just 15%.

[7] *The Tax Reform Act of 2014: Fixing Our Broken Tax Code So That It Works for American Families and Job Creators*, House Ways and Means Committee, p. 20. These revenue estimates should most accurately be thought of as nine-year estimates (rather than the more-common 10-year estimates) because its effective date is generally the tax years beginning after 12/31/14.

[8] *Technical Explanation of the Tax Reform Act of 2014: Title III—Business Tax Reform*, Joint Committee on Taxation, JCX-14-14, February 26, 2014.

[9] Comments delivered on a March 7, 2014 webcast sponsored by KPMG, LLP.

[10] "The Devil Is in the Details: Reflections on the Camp Draft," by Reuven S. Avi-Yonah, in *Tax Notes International*, March 24, 2014, p. 1056.

[11] "Royalties Included in Reduced Intangibles Rate in Camp Draft, Ways and Means Says," by Andrew Velarde, *Tax Notes*, March 11, 2014.

[12] Every year since 1977, the U.S. Bureau of Economic Analysis has multinational companies in America through legally mandated surveys (with penalties for noncompliance) that collect and publicly disseminate operational and financial data. By design, BEA statistics track all multinational companies in the United States: both the U.S. parents of U.S.-headquartered multinationals (as well as their foreign affiliates) and the U.S. affiliates of foreign-headquartered multinationals (but not their foreign parents). In accord with the practice of many countries, the BEA defines a U.S.-headquartered multinational company as any U.S. enterprise (the "parent") that holds at least a 10% direct ownership stake in at least one foreign business enterprise (the "affiliate"). The BEA analogously defines a U.S. affiliate of a foreign-headquartered multinational company as any U.S. enterprise in which at least a 10% direct ownership stake is held by at least one foreign business enterprise. In Figure 1A, shares data were obtained from the BEA data online at www.bea.gov.

[13] Barefoot, Kevin B., and Raymond J. Mataloni, Jr. 2011. "Operations of U.S. Multinational Companies in the United States and Abroad: Preliminary Results from the 2009 Benchmark Survey." *Survey of Current Business*, November, pp. 29–55.

[14] Barefoot, Kevin B., and Jennifer Koncz-Bruner. 2012. "A Profile of U.S. Exporters and Importers of Services." *Survey of Current Business*, June, pp. 66–87.

[15] "The Camp Proposal: Patent Boxes in the Age of BEPS," by Marie Sapirie, *Tax Notes International*, March 24, 2014, p. 1065.

[16] Note that these BEA calculations assume that implementation of FBCII would not measure gross income as something like total revenues—i.e., would not encompass basic costs of goods sold such as materials purchased and payroll. If FBCII approximated gross income with something broader like total revenues, then the mismeasurement of FBCII discussed in the text would be all the more egregious because it would capture business expenses wholly unrelated to IP such as purchases of electricity, heating fuel, water, and sewer connectivity.

[17] "Camp's Approach Treats Most CFC Income as Intangible," by Martin A. Sullivan, in *Tax Notes International*, March 24, 2014.

[18] For an overview and many references to research studies on global supply networks, see *American Companies and Global Supply Networks: Driving U.S. Economic Growth and Jobs by Connecting with the World*, white paper for Business Roundtable and United States Council for International Business, Matthew J. Slaughter, 2013.

[19] The trade data cited in this sentence come from the U.S. Census Bureau and the BEA.

[20] *Technical Explanation of the Tax Reform Act of 2014: Title IV—Participation Exemption System for the Taxation of Foreign Income*, Joint Committee on Taxation, JCX-15-14, February 26, 2014, p. 40.

[21] *Macroeconomic Analysis of the "Tax Reform Act of 2014"*, Joint Committee on Taxation, JCX-22-14, February 26, 2014, pp. 15-16.

[22] The underlying data in Figure 2A come from Table 1.1.5 of the National Income and Product Accounts of the Bureau of Economic Analysis, accessed on-line at www.bea.gov. The underlying dollar figures in Figure 2A are annual nominal totals. These two components of total U.S. capital investment together are the closest NIPA measure of the tangible assets specified in the Discussion Draft.

[23] See surveys in, e.g., Cohen, Wesley, and Steven Klepper, 1996, "A Reprise of Size and R&D." *Economic Journal*, 106(437). Another useful survey is Acemoglu, Daron, Ufuk Akcigit, Nicholas Bloom, and William Kerr, 2012, "Innovation, Reallocation, and Growth," manuscript.

[24] In Figure 2B, data were obtained from the BEA multinationals data online at www.bea.gov.

[25] This figure is reproduced from "The Role of Entrepreneurship in U.S. Job Creation and Economic Dynamism," *Journal of Economic Perspectives*, Summer 2014, pp. 3-14, by Ryan Decker, John Haltiwanger, Ron Jarmin, and Javier Miranda.

[26] Startup statistics in this and the previous paragraph come from the study in note 24 and also from Haltiwanger, John, Ron Jarmin, and Javier Miranda. 2012. *Where Have All the Young Firms Gone?* Kansas City: Kauffman Foundation.

[27] See page 7 of The White House. 2011. *A Strategy for American Innovation: Securing Our Economic Growth and Prosperity*. February: National Economic Council, Council of Economic Advisers, and Office of Science and Technology Policy.

[28] See page 1 of United States Department of Commerce. 2012. *Intellectual Property and the U.S. Economy: Industries in Focus*. Washington, DC: Economics and Statistics Administration and the United States Patent and Trademark Office.

[29] Pages 9 and 13 of Krugman, Paul R. 1990. *The Age of Diminished Expectations*. Cambridge: MIT Press.

[30] Page 316 of Solow, Robert M. 1957. "Technical Change and the Aggregate Production Function," *The Review of Economics and Statistics*, 39(3). See also his closely related work: "A Contribution to the Theory of Economic Growth," *Quarterly Journal of Economics*, 70(1), 1956.

[31] Jones, Charles I. 2002. "Sources of U.S. Economic Growth in a World of Ideas." *American Economic Review*, 92(1).

[32] For example: Feenstra, Robert C., Benjamin R. Mandel, Marshall B. Reinsdorf, and Matthew J. Slaughter, 2013, "Effects of Terms of Trade Gains and Tariff Changes on the Measurement of U.S. Productivity Growth," *American Economic Journal : Economic Policy*, 5(1).

[33] Jones and Williams (1998), p. 1121, estimate "the social return [to R&D] of 30% and a private rate of return of 7 to 14%: optimal R&D spending as a share of GDP is more than two to four times larger than actual spending." Bloom, et al (2012), p. 3, report, "We find that technology spillovers dominate, so that the gross social returns to R&D are at least twice as high as the private returns … We estimate that the (gross) social return to R&D exceeds the private return, which in our baseline specification are calculated at 55% and 21%, respectively. At the aggregate level, this implies under-investment in R&D, with the socially optimal level being over twice as high as the level of observed R&D." Jones, Charles I., and John C. Williams, 1998, "Measuring the Social Returns to R&D," *Quarterly Journal of Economics,* 113(4). Bloom, Nicholas, Marck Schankerman, and John Van Reenen, 2012, "Identifying Technology Spillovers and Product-Market Rivalry," Manuscript.

[34] Both quotations in this paragraph come from p. 65 and p. 43, respectively, of National Research Council of the National Academies, 2012, *Rising to the Challenge: U.S. Innovation Policy for the Global Economy*, Washington, D.C., The National Academies Press.

[35] Page 173 of: Hall, Robert E., and Charles I. Jones, 1997, "Levels of Economic Activity Across Countries," *American Economic Review*, 87(2).

[36] See, for example, Bloom and Van Reenen (2002) cited in note 33.

[37] This U.S. Department of Commerce study (cited in note 28) focused on utility patents, which it defines (p. 5) as "patents which assist owners in protecting the rights of inventions and innovative processes." Utility patents can be applied to processes, machines, articles of manufacture, and compositions of matter. The other two categories of U.S. patents are design patents, which cover the design of items (rather than the items themselves), and plant patents, which cover innovations of living plants. Patents enable the owner to pursue legal action to exclude, for a finite amount of time, others from making, using, or selling that invention in America. Patents are issued to individual inventors, who as they like can assign ownership rights to other individuals, corporations, universities, other organizations.

[38] As described by U.S. Department of Commerce (2012), p. 29, copyrights protect "original works of authorship. These works must be fixed in a tangible form of expression, meaning that concepts that never leave the confines of our minds cannot be copyrighted. Protection under copyright, which lasts for the life of the author plus an additional 70 years, is secured automatically when a work is created. Neither publication nor registration with the U.S. Copyright Office is required to secure copyright protection. But registering a copyright does establish a public record of the copyright, and it can be beneficial because of incentives provided to encourage registration." Works eligible for copyright protection include literary works, computer programs, musical works, dramatic works, pictorial and graphic works, motion pictures, and sound recordings. More than 33.7 million copyrights have been registered in

America since Congress enacted the first copyright law in 1790. In 2009, more than 382,000 new basic copyrights were registered.

[39] Trademarks protect the brands of goods and services. As defined by the U.S. Department of Commerce (2012), p. 11, a trademark is "a word, phrase, symbol, design, or combination thereof that identifies and distinguishes the source of the goods of one party from those of others … Unlike a patent, which protects an invention, or a copyright, which protects a work of original authorship, a trademark does not protect a new product or service per se. A trademark instead confers protection upon the brand or identity of a good, thus preventing competitors from leveraging another firm's reputation and confusing consumers as to the source of the goods. Service marks are similar in nature to trademarks, but distinguish the source of a service rather than a good." With payment of a nominal fee, any company or individual, American or foreign, can apply to register a trademark with the United States Patent and Trademark Office. Once granted, trademark registrations can remain in force indefinitely as long as the trademark remains in active use and maintenance payments are made.

[40] What is tracked here is average weekly earnings of private wage and salary workers. Included in wages are pay for vacation and other paid leave, bonuses, stock options, tips, cash value of meals and lodging, contributions to deferred compensation plans such as 401(k) plans. All data in this paragraph, in the following paragraph, and in the related figure and related discussion come from U.S. Department of Commerce (2012).

[41] Figures O-27 and O-28 of: National Science Board, 2012, *Science and Engineering Indicators 2012*, Arlington, VA: National Science Foundation (NSB 12-01).

[42] Pages 1-5 of: National Academy of Sciences, National Academy of Engineering, and Institute of Medicine, 2010, *Rising Above the Gathering Storm, Revisited: Rapidly Approaching Category 5*, Washington, D.C.: The National Academies Press.

[43] The White House (2011), p. 8 as cited in note 27.

[44] For the three studies listed, see World Economic Forum (2014), World Intellectual Property Organization and INSEAD (2012), and Atkinson and Ezell (2012). World Economic Forum, Center for Global Competitiveness and Performance, 2014, *The Global Competitiveness Report: 2014-2015*. World Intellectual Property Organization and INSEAD, 2012, *The Global Innovation Index 2012: Stronger Innovation Linkages for Global Growth*, Fontainebleau: INSEAD Press. Atkinson, Robert D. and Stephen J. Ezell, 2012, *Innovation Economics: The Race for Global Advantage*, Yale University Press: New Haven and London.

[45] These productivity-growth averages were calculated from annual data reported online by U.S. Bureau of Labor Statistics on 10/20/14 at www.bls.gov for data series #PRS85006092. The non-farm business sector is the most-commonly used measure of overall productivity growth for the U.S. economy, in part because of greater measurement challenges for both the public and agricultural sectors. Non-farm business accounted for about 74% of total U.S. gross domestic product in 2013. The unemployment rates are calculated for each period as the simple average

of the constituent monthly unemployment rates, as reported online by U.S. Bureau of Labor Statistics on 10/20/14 at www.bls.gov.

[46] Page 1 of Robert J. Gordon, 2012, "Is U.S. Economic Growth Over? Faltering Innovation Confronts the Six Headwinds," National Bureau of Economic Research Working Paper No. 18315. See also, for example, the following three careful recent studies and references therein. John Fernald, 2014, "Productivity and Potential Output Before, During, and After the Great Recession," National Bureau of Economic Research Working Paper No. 20248. Robert J. Gordon, 2014, "A New Method of Estimating Potential Real GDP Growth," National Bureau of Economic Research Working Paper No. 20423. Robert E. Hall, 2014, "Quantifying the Lasting Harm to the U.S. Economy from the Financial Crisis," National Bureau of Economic Research Working Paper No. 20183. *The Economist* 2012 special report from its October 13 issue, "For Richer, For Poorer," also summarizes much of this recent and ongoing academic work.

[47] Table 2-2 and related discussion of *An Update to the Budget and Economic Outlook: 2014 to 2024*, U.S. Congressional Budget Office, August 2014. *Economic Projections of Federal Reserve Board Members and Federal Reserve Bank Presidents, September 2014*, released September 17, 2014.

[48] In this paragraph, the first quote comes from p. xvi of National Research Council of the National Academies, 2012, *Rising to the Challenge: U.S. Innovation Policy for the Global Economy*, Washington, D.C.: The National Academies Press. The second quote comes from Wuchty, Jones, and Uzzil (2007), p. 1036, who report (p. 1036) that, "Research is increasingly done in teams across nearly all fields. Teams typically produce more frequently cited research than individuals do, and this advantage has been increasing over time. Teams now also produce the exceptionally high-impact research, even where that distinction was once the domain of solo authors. These results are detailed for sciences and engineering, social sciences, arts and humanities, and patents, suggesting that the process of knowledge creation has fundamentally changed." Wuchty, Stefan, Benjamin F. Jones, and Brian Uzzil, 2007, "The Increasing Dominance of Teams in Production of Knowledge," *Science*, May 18.

[49] National Research Council of the National Academies (2012), p. 12, as cited in note 48.

[50] In their survey of micro-level studies of productivity, Bartelsman and Doms (2002, p. 578) state that, "Of the basic findings related to productivity and productivity growth uncovered by recent research using micro data, perhaps most significant is the degree of heterogeneity across establishments and firms in productivity in nearly all industries examined." This heterogeneity in productivity and other characteristics (e.g., size) appears in both developed countries (e.g., Olley and Pakes, 1996, and Syverson, 2004 for the United States) and developing countries (e.g., Cabral and Mata, 2003). Bartelsman, Eric J., and Mark Doms, 2002, "Understanding Productivity: Lessons from Longitudinal Microdata," *Journal of Economic Literature*, 38. Olley, G. Steve, and Ariel Pakes, 1996, "The Dynamics of Productivity in the Telecommunications Equipment Industry," *Econometrica*, 64(6). Syverson, Chad, 2004, "Market Structure and Productivity: A Concrete Example," *Journal of Political Economy*,

112(6). Cabral, Luís M. B., and José Mata, 2003, "On the Evolution of the Firm Size Distribution: Facts and Theory," *American Economic Review*, 93(4).

[51] Superior productivity of U.S. exporters is usefully summarized in studies including Lewis and Richardson (2001) and Bernard, et al (2007), which states the following (pp. 110-111): "Firms that export look very different from non-exporters along a number of dimensions … even in the same detailed industry. Exporters [in 2002 were] significantly larger than non-exporters, by approximately 97% for employment and 108% for shipments; they are more productive by roughly 11% for value-added per worker and 3% for TFP; they also pay higher wages by around 6%. Finally, exporters are relatively more capital- and skill-intensive than non-exporters by approximately 12 and 11%, respectively." Lewis, Howard III and J. David Richardson, 2001, *Why Global Commitment Really Matters!* Washington, D.C. Institute for International Economics. Bernard, Andrew B.; Jensen, J. Bradford; Redding, Stephen J.; and Peter K. Schott, 2007, "Firms in International Trade," *Journal of Economic Perspectives*, 21(3).

[52] Representative evidence of this performance advantage for U.S. multinationals appears in Doms and Jensen (1998), who documented how plants that are part of multinational companies—both U.S. parent companies of U.S.-based multinationals and U.S. affiliates of foreign-based multinationals—tend to exhibit higher TFP, labor productivity, and other performance characteristics such as capital intensity, skill intensity, and wages. This superior performance of multinationals has also been documented in many other countries: e.g., Criscuolo, Haskel, and Slaughter (2010) for the United Kingdom. Doms, Mark E., and J. Bradford Jensen. 1998. "Comparing Wages, Skills, and Productivity Between Domestically and Foreign-Owned Manufacturing Establishments in the United States." In R. Baldwin, R. Lipsey, and J. D. Richardson (eds.), *Geography and Ownership as Bases for Economic Accounting*. Chicago: University of Chicago Press. Criscuolo, Chiara, Jonathan E. Haskel, and Matthew J. Slaughter. 2010. "Global Engagement and the Innovation Activities of Firms," *International Journal of Industrial Organization*, 28(2).

[53] In Figure 3C and the supporting text, BEA data on U.S. multinational companies have been matched as needed with private-sector economy-wide data from appropriate government sources. The BEA data are available online at www.bea.gov. Details on the source and definition of these non-multinationals data are as follows, where all data — in Figure 3C and all subsequent figures — were obtained online or from Barefoot (2012). Employment: Bureau of Labor Statistics, U.S. Department of Labor — U.S. private-sector nonfarm payroll employment. Output: BEA — Private-sector value-added output adjusted to exclude value added in depository institutions and private households, imputed rental income from owner-occupied housing, and business transfer payments. Investment: BEA National Income and Product Accounts — Table 5.2.5 (Gross and Net Domestic Investment by Major Type) Line 10 (Nonresidential gross private fixed investment). Research and Development: National Science Foundation — Total R&D performed by the industrial sector, current dollars. Exports and Imports of Goods — BEA National Income and Product Accounts, as reported in Barefoot and Mataloni (2011). Compensation Premium for U.S. Multinational Companies: The national measure of private-sector labor compensation comes from the BEA National Income and Product Accounts Table 6.2 (Compensation of Employees by Industry) Line 3 (Private Industries). Employee compensation as measured in the

BEA data includes wages, salaries and benefits — mandated, contracted and voluntary. Finally, note that at the time of writing NSF R&D data for 2012 were not yet available, so in Figure 3C shares of U.S. private-sector R&D for 2011 are reported.

[54] "Results from virtually every study across industries and countries confirm that high productivity precedes entry into export markets. These findings are suggestive of the presence of sunk entry costs into export markets that only the most productive firms find it profitable to incur" (Bernard, et al, 2007, p. 111). This fact of high-productivity companies selecting into global engagement has spurred a large and ongoing literature in international economics with a variety of new general-equilibrium models built on the foundation of this fact. For example, a now standard research framework of multinational firms assumes these firms obtain high-productivity knowledge assets that are transferred from home-country parents to host-country affiliates.

[55] Pages 166-167 of: Baily, Martin Neil, and Robert M. Solow, 2001, "International Productivity Comparisons Built from the Firm Level," *Journal of Economic Perspectives,* 15(3).

[56] Page 333 of: Corrado, Carol, Paul Lengermann, and Larry Slifman, 2009, "The Contributions of Multinational Corporations to U.S. Productivity Growth, 1977-2000," In Marshall B. Reinsdorf and Matthew J. Slaughter (eds.) *International Flows of Invisibles: Trade in Services and Intangibles in the Era of Globalization*, NBER and University of Chicago Press.

[57] In Figure 3D, data for the shares were obtained from the BEA multinationals data online at www.bea.gov.

[58] Ottaviano, Gianmarco I.P., Giovanni Peri, and Greg C. Wright, 2010, "Immigration, Offshoring, and American Jobs," National Bureau of Economic Research Working Paper No. 16439. Studies that find a link from outward investment and U.S. exports are well summarized in: Moran, Theodore, 2009, *American Multinationals and American Economic Interests: New Dimensions to an Old Debate*, Washington, D.C.: Peterson Institute for International Economics.

[59] United States International Trade Commission. 2011. *U.S. Multinational Services Companies: Effects of Foreign Affiliate Activity on U.S. Employment*. Washington, D.C.: Office of Industries.

[60] Page 195 and page 181 of: Desai, Mihir A.; Foley, C. Fritz; and James R. Hines, Jr. 2009. "Domestic Effects of the Foreign Affiliates of U.S. Multinationals." *American Economic Journal: Economic Policy*, 1(1).

[61] Page 1 of: Abramovsky, Laura, Rachel Griffith, and Helen Miller, 2012, "Offshoring High-Skilled Jobs: EU Multinationals and Domestic Employment of Inventors," Center for Economic Policy Research Discussion Paper No. 8837.

[62] *The U.S. Manufacturing Base: Four Signs of Strength*, by Theodore H. Moran and Lindsay Oldenski, Peterson Institute of Economics Policy Brief No. 14-18, June 2014.