

January 22, 2018

What Should Trade Agreements Focus On to Boost Long-Term Economic Growth? The Cases of NAFTA and TPP

By Maria Vassalou, Ph.D. and John Donaldson, Ph.D.

Globalization and its basic premise of unfettered free trade in goods, services and the factors of production have recently fallen into relative disrepute. In the US, the arrival of the Trump Administration has led to the country's withdrawal from the Trans-Pacific Partnership (TPP) trade agreement while renegotiations of the NAFTA pact between the US, Mexico and Canada are currently underway. On the other side of the Atlantic, Brexit can be interpreted as a reaction to globalization, and in particular to the free movement of labor services into the UK from the European Union. At the same time, both the US and the EU are implicitly seeking to restrict foreign investment, particularly from China, that involves the acquisition of high technology companies deemed to be important, either to national security or to the area's international competitive position.

It is by now widely accepted that the sudden openness of a country to globalization does not benefit everyone equally. Following this realization, the debate that has emerged is one of free trade vs no trade. We believe that this is the wrong discussion to have. Instead, in our view, the focus should be on whether one can devise optimal trade policies that mitigate the principle drawbacks of unfettered free trade as revealed over the recent decades.

There are many perspectives one can use to examine the complex effects that free trade and globalization may have on globalized economies. Depending on one's stance, there are several positive and/or negative socioeconomic consequences one can identify. We do not intend to exhaust these here. Rather, our goal is to focus on the long-term effects that free trade may have on the globalizing country's economic growth and derive implications for trade policy objectives. With that in mind, we consider the implications of our analysis for two widely discussed trade agreements—NAFTA and TPP. In doing so, we do not take a stand on whether globalization is "good or bad" for a country in the short run. Rather, we suggest aspects of globalization that should not be overlooked in the context of striking or renegotiating trade agreements, if an economy's long run growth potential is to be enhanced.

Perella Weinberg Partners Global Macro is a highly liquid strategy investing in equity indices, currencies, sovereign debt, credit, and commodities.

If you would like to learn more about Perella Weinberg Partners, please contact:

Client Services
212.287.3111
perellaweinbergir@pwpartners.com

Why Should Investors Care About Trade Policies?

Trade agreements, or lack thereof, matter for investment purposes to the extent that they affect current or future economic growth. There are several avenues through which trade may influence an economy's future growth path. Most of the attention in the media so far has been restricted to its potential job losses. However, as we will discuss below, there are other important ways in which trade can affect growth. Specifically, note that the growth rate in a country's capital stock per worker is dependent on its Total Factor Productivity (TFP) growth.¹ In addition, it is important to note that a country's growth in labor productivity, which is the key to higher wages and therefore, per capital income, is entirely dependent on growth in TFP and capital per worker. Furthermore, the implications labor productivity has on wages will also affect monetary policy decisions as growth in wages has a big influence on the future course of inflation dynamics and therefore monetary policy. It follows that any positive or negative effects trade may have on capital investments and/or TFP growth will affect the future path of economic growth and inflation, which in turn will largely determine investment returns across all asset classes. Therefore, developments in trade relations matter to us and merit special attention.

Long-Term Effects of Free Trade

In the past decade or so, two observations have intrigued and puzzled economists, policy makers and economic commentators alike. First, some economies exhibited significantly greater resilience in responding to the financial crisis of 2007-2008, whereas others have struggled to find their footing. Second, in most parts of the developed world, TFP growth has slowed down significantly over the past decade. While some of this slowdown is attributed to the effects of the financial crisis and the waning influence of the information technology revolution, empirical evidence demonstrates that the slowdown has been widespread across sectors, and economies, and therefore cannot be attributed to the IT slowdown alone. In addition, the slower trend of TFP growth predates the financial crisis.²

Figure 1, Panel A shows the slowdown in actual output growth relative to trend in advanced economies since the financial crisis. As the decomposition of the deviation between trend and actual output in Panel B shows, about 40% of the decline in output is due to a slowdown in TFP growth. Another approximately 25% of the decline is due to a reduction in physical capital deployed. This reduction is consistent with the evidence we have presented elsewhere about the reduced need for capital due to the increased role of technology and the service sector in the economy.³

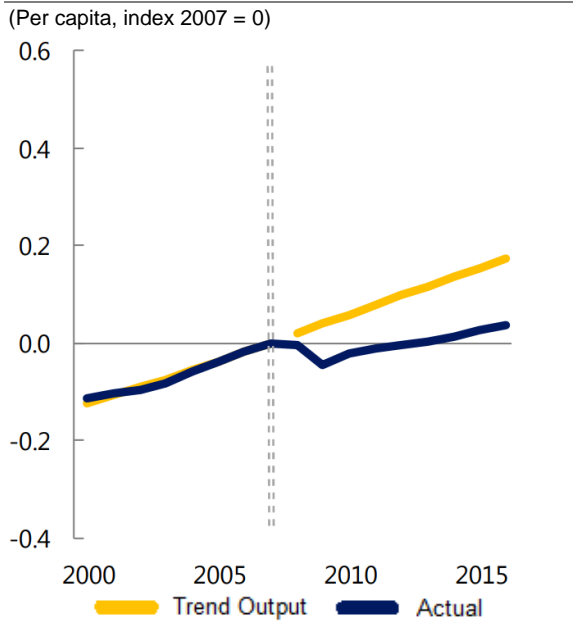
¹ Broadly speaking, TFP captures the efficiencies obtained in the production function through factors other than capital and labor, such as, for instance, technology and new product creation.

² Adler, G., R Duval, D. Furceri, S. Celik, K Koloskova and M. Poplawski-Ribeiro, "Gone with the Headwinds: Global Productivity", IMF, April 2017, SDN/17/04, and R. Cardarelli, and L. Lusinyan, "U.S. Total Factor Productivity Slowdown: Evidence from the U.S. States", IMF Working Paper, WP/15/116.

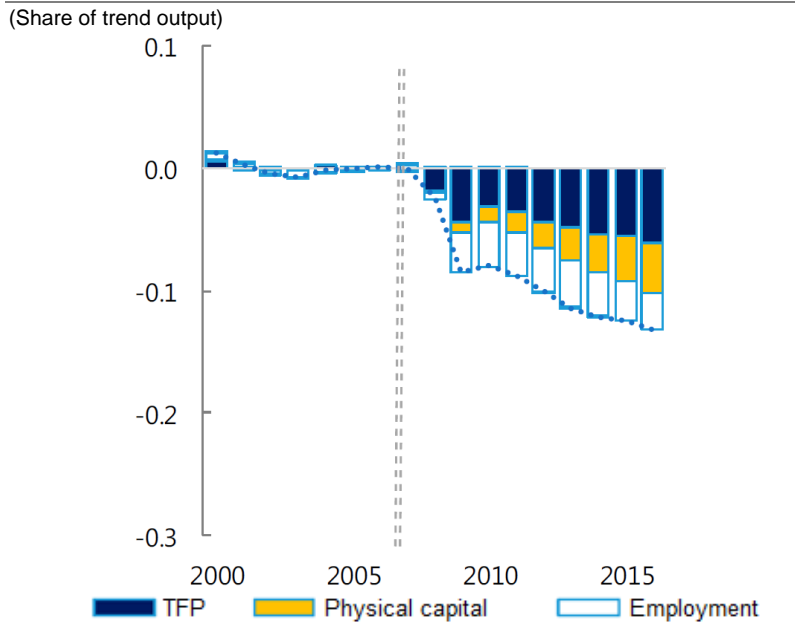
³ See Maria Vassalou, and John Donaldson, "Digital Technology is Displacing Labor and Capital", PWP Global Macro Insights, September 28, 2016.

FIGURE 1: TREND VS ACTUAL OUTPUT POST-GLOBAL FINANCIAL CRISIS IN ADVANCED ECONOMIES (PER CAPITA)

PANEL A: ACTUAL AND PRE-GFC TREND OUTPUT



PANEL B: CONTRIBUTIONS TO DEVIATIONS FROM (PRE-GFC) TREND OUTPUT



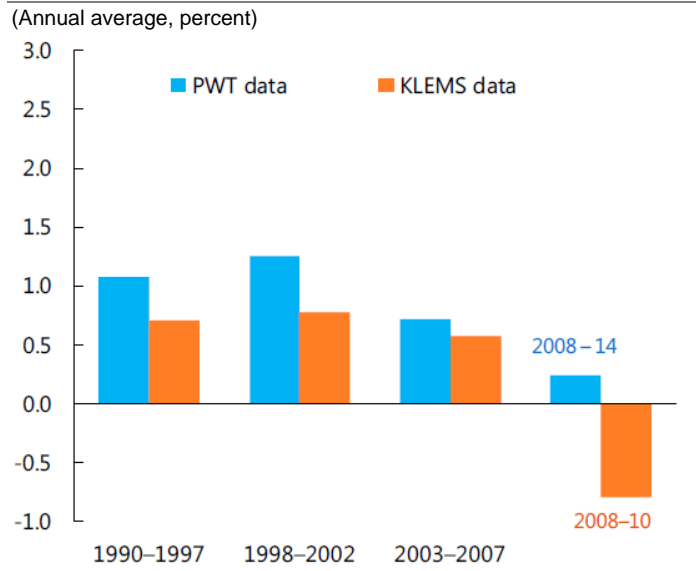
Source: IMF Staff Discussion Note: Gone with the Headwinds: Global Productivity, April 2017
 Data sources: Penn World Table 9.0; IMF, World Economic Outlook; and IMF staff calculations

FIGURE 2: TOTAL FACTOR PRODUCTIVITY (TFP) GROWTH

PANEL A: TOTAL FACTOR PRODUCTIVITY GROWTH FOR ADVANCED ECONOMIES, 1990–2016



PANEL B: CYCLICALLY ADJUSTED TOTAL FACTOR PRODUCTIVITY GROWTH FOR ADVANCED ECONOMIES, 1990–2014



Source: IMF Staff Discussion Note: Gone with the Headwinds: Global Productivity, April 2017
 Data sources: Penn World Table 9.0; IMF, World Economic Outlook; and IMF staff calculations

The loss in TFP growth actually predates the financial crisis as Figure 2 shows and began around 2000. Indeed, even after seasonal adjustments, and using two alternative data sources, the Penn World Table (PWT) and the World KLEMS data, Panel B shows that the slowdown in TFP started in the early 2000s.

How Free Trade Can Reduce TFP Growth

In what follows, we discuss two aspects of free trade that may have a profound effect on long-term TFP growth of specific countries participating in a free trade agreement. While one cannot prove that the challenges faced by some countries both in rebounding from the financial crisis and in dealing with the slowdown in TFP are due to these two aspects of free trade, there is suggestive evidence of a material causal relationship.

A. Free trade can lead to loss of industrial diversity which in turn reduces the resilience of an economy to external shocks

The classic trade theory posits that trade emerges when there is an absolute or comparative advantage between two parties. Country A may be able to produce cars more efficiently whereas Country B may be more skilled and cheaper in producing garments. If they enter into a free trade agreement, by design or as a consequence of the agreement, over time Country A will end up being specialized in producing cars and Country B in producing garments. While this sounds like a huge efficiency gain for both countries, benefiting the consumers of both through lower prices, it does come with its share of risks.

Perhaps an intuitive way to illustrate the perils of specialization is by drawing a simple analogy between a nation's portfolio of industries and an investor's portfolio. From the investor's perspective a well-diversified portfolio across securities and asset classes can be expected to exhibit lower volatility and higher risk-adjusted returns, that is, a higher Sharpe ratio. We argue below that a similar argument can be made for a country's industrial structure. The broader the industrial diversity of a country, the lower the volatility of its GDP growth, and the better its ability to withstand external shocks and weather recessions.⁴

On average, increased technological diversification is associated with lower real GDP growth volatility. The opposite characteristic, increased specialization, appears to have negative consequences for an economy's ability to sustain growth; that is, more diversified economies tend to have positive growth episodes of longer duration, especially if they include a diversified and technologically advanced manufacturing sector that contributes significantly to GDP. Such economies tend to have a greater ease in changing the types of goods and services they produce to adapt to changes in demand. In addition, they tend to have more flexibility in substituting across inputs in order to moderate the consequences of particular supply shocks, often associated with recessions. Furthermore, small tail shocks in undiversified economies can lead to significant recessions, whereas larger shocks in diversified economies can generate small negative effects on growth. The analysis of Acemoglu, Ozdaglar, and Tahbaz-Salehi (2016) supports these arguments.⁵

Another way to illustrate how industry diversity contributes to economic growth and stability over time is through the concept of Economic Complexity developed in recent years by MIT's Cesar Hidalgo and Harvard's Ricardo Hausmann. The Economic Complexity Index (ECI) of a country is an index that captures the country's industry composition and contains information related to the diversity of a country's exports as well as their sophistication. The index has also been shown by Hidalgo and Hausmann (2009) to have predictive ability of future economic growth. Using this concept, Okada and Yano (2015) showed that EU countries that score

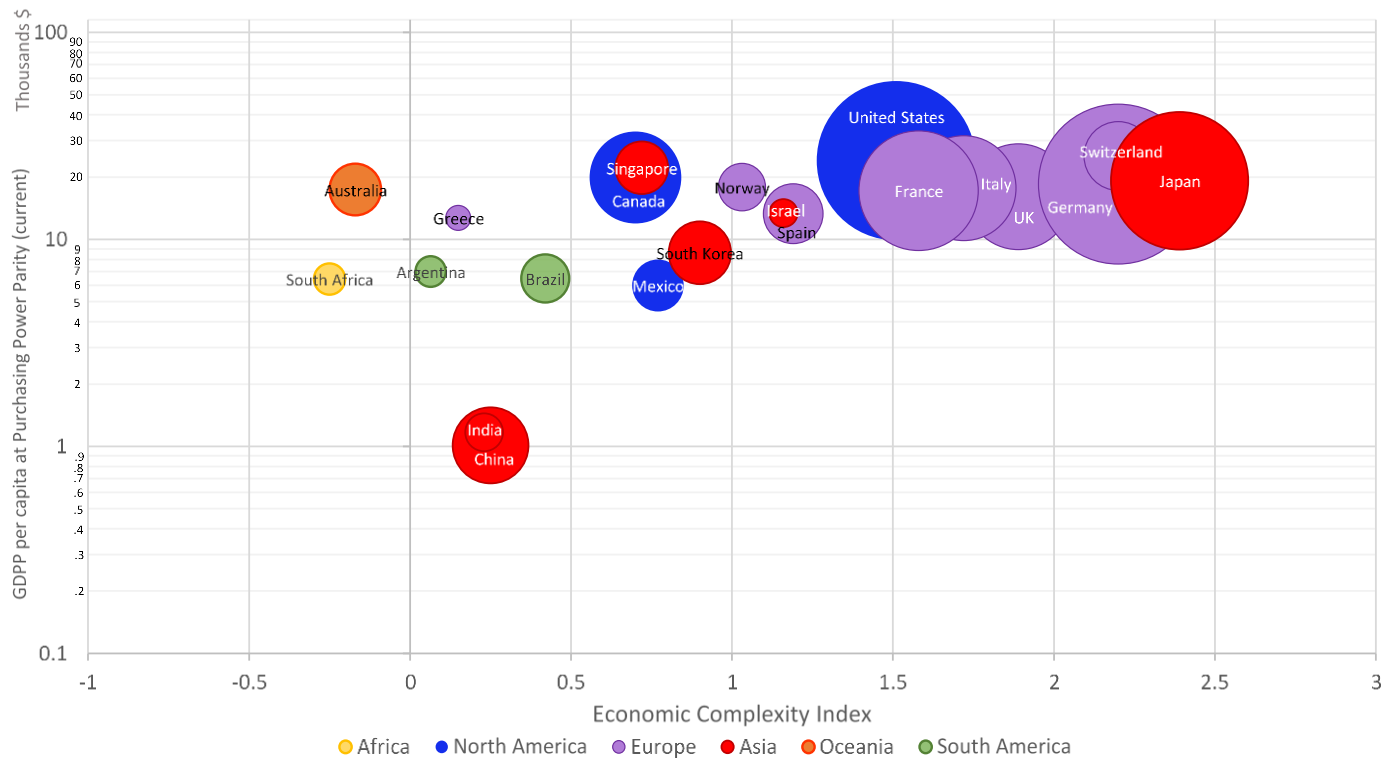
⁴ See for instance, Ramey, G., and V. Ramey, 1995, "Cross-Country Evidence on the Link between Volatility and Growth", *American Economic Review*, 85, 1138-1151, and Shediac, R., C. Haddad, and S. Ghazaly, 2011, "Resilient, Stable, Sustainable: The Benefits of Economic Diversification", Strategy&, Formerly Booz & Company

⁵ D. Acemoglu, A Ozdaglar, and A. Tahbaz-Salehi, "Networks, Shocks, and Systemic Risk", *The Oxford Handbook of the Economics of Networks*, Y. Bramoulle, A. Galeotti, and B. Rogers (eds), April 2016.

high in ECI were less severely affected by the 2008 economic collapse, and have subsequently experienced superior economic performance.

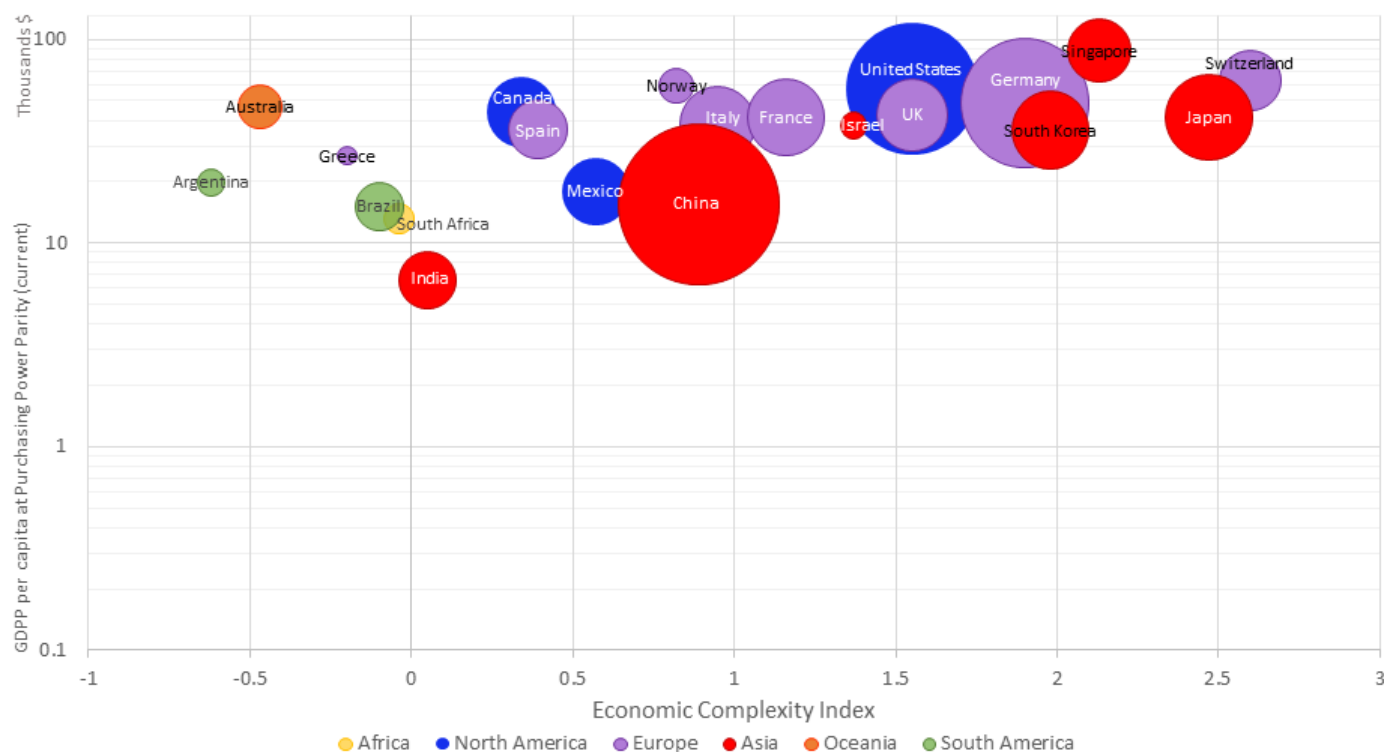
Using data from MIT’s Observatory of Economic Complexity, Figures 3A and 3B below graph the GDP per capita in current values against the ECI index of various countries for 1990 and 2016. The size of the depicted bubbles in the graphs represents each country’s importance in total global exports. In both time periods, we observe a positive correlation between economic complexity and GDP per capita. The higher a country scores in ECI, the higher its GDP per capita. Exceptions can be found in the cases of countries rich in natural resources, such as Norway, South Africa, and Canada. Interestingly, for all other countries where GDP increased from 1990 to 2016, their ECI increased proportionally as well. A notable example is China, where GDP per capita doubled between 1990 and 2016 at the same time as ECI roughly doubled too. While these graphs do not imply a causation, they do demonstrate that high ECI coincides with high GDP per capita.

FIGURE 3A: ECONOMIC COMPLEXITY AND GDP PER CAPITA (1990)



Source: OEC, <https://atlas.media.mit.edu/en/rankings/country/eci/>

FIGURE 3B: ECONOMIC COMPLEXITY AND GDP (2016)



Source: OEC, <https://atlas.media.mit.edu/en/rankings/country/eci/>

A further comparison of Figures 3A and 3B shows that a large increase in a country's ECI often coincides with an equivalent increase in its exports as a percentage of global exports. In addition, countries that stayed around the same ECI level or slipped, saw their share of global exports shrink. The US presents a good example of this tendency. While its ECI stayed relatively constant over time, the country's share of global exports shrank. In Europe, Italy, France, and even Germany saw their ECI decline at the same time as their share of global exports fell as well.

The results presented in this Section suggest that a country's industrial diversity is highly correlated with GDP per capita and thus its historical growth path. Furthermore, improvements in a country's economic complexity are accompanied by higher GDP per capita. Given the strong link between industrial diversity and economic growth, it follows that trade agreements and negotiations should be structured in a way that aim to preserve and enhance a country's industrial diversification and complexity.

B. Free trade may disrupt technological spillovers within and across industries, potentially slowing down TFP growth

When we try to imagine the positive effects industrial diversity might have on economic growth we are quickly led to the concept of 'spillovers.' The notion of a spillover is the idea that technological innovations in one firm or industry appear to have consequences for the innovations in other firms in the same industry or other related industries. In effect, there are externalities to the development of technologies that are beneficial beyond the firm or industry that created them. These externalities appear to be so significant that the social returns to R&D are estimated to be two to three times larger than the private returns the firms that conduct the R&D earn. The above argument implies that an economy that exhibits industrial diversity would

encourage spillovers, as its diversified industrial structure would benefit from a greater array of technological spillovers.⁶

How do Spillovers Work?

From an aggregate perspective, these innovation externalities allow economies to experience increasing returns and thus grow more rapidly, a phenomenon that is often termed ‘agglomeration.’ According to Delgado et al. (2012), “agglomeration (effects) arise from interdependencies across complementary economic activities that give rise to increasing returns”. These effects are most pronounced in industrial clusters, that is, groups of related industries operating in the same location. Related industries are defined as industries that exhibit one or more of the following features: a. they share the same labor pool, b. they have common input-output relationships with respect to intermediate goods, and c. they share certain technological foundations.

The empirical analysis in Delgado et al. (2012) finds that industries located in a strong cluster experience greater employment growth than the national average, and greater new industry creation within the cluster.⁷ Furthermore, the existence of multiple types of economic complementarities within a cluster seems to be more important in stimulating growth than the presence of a single foundational expertise such as ‘scientific capability and knowledge.’ In particular, local discoveries are shown to provide benefits not only to the firm of origin, but are likely to enhance the knowledge base of multiple local firms in related industries.

Local educational institutions are thought to enhance these spillover effects as well. The overall points that this literature seem to be making are twofold:

- (1) Knowledge spillovers enhance economic growth, and
- (2) Spillovers are facilitated by persons residing and working in specific geographical areas.

In particular, the benefits of interaction between suppliers and competitors in technologically related industries, are likely to be higher, for example, if the activity is entirely in the “San Jose Metro area” than if the suppliers and competitors are located in San Jose and across China.” Other work in Delgado et al. (2010, 2014) emphasizes that strong cluster areas enjoy “higher employment and patenting growth,” and new industries emerge more abundantly there in the sense of higher growth in new business formation and startup employment. The formation of larger numbers of new establishments by existing firms is also observed.

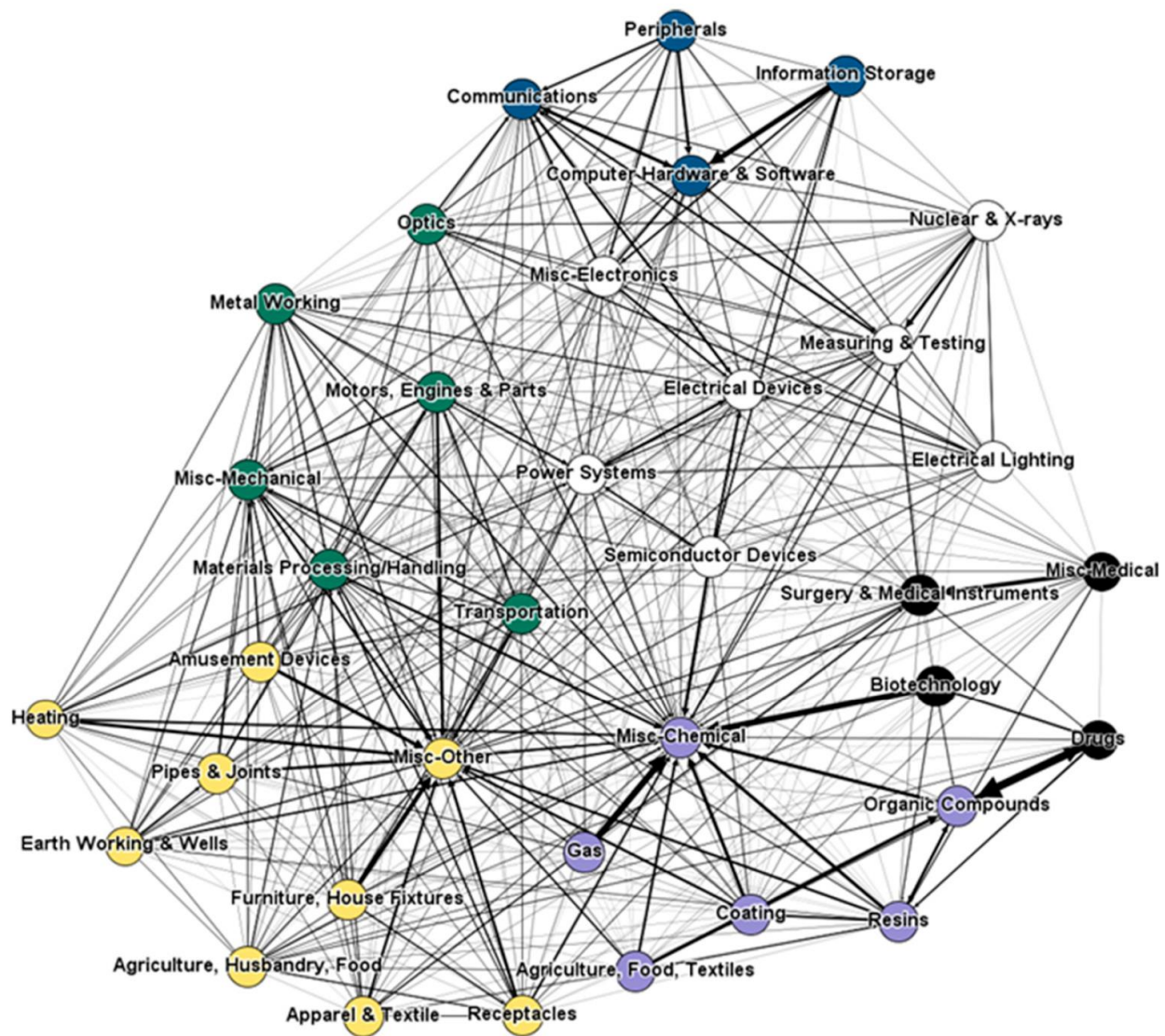
While spillovers are difficult to measure precisely, a clean way to identify the linkages across industries, and therefore the potential for cross-industry spillover externalities to growth, is through cross-industry patent citations. Early studies to consider such effects were those by Jaffe (1986, 1988).⁸ Several subsequent studies consider the extent of such linkages. More recently, Acemoglu et al. (2014) examine the technological interactions within US industries as measured by cross-industry patent citations. The cross-industry patent linkages and their strength are depicted in Figure 4 below:

⁶ See for instance, Leo Sveikauskas, “R&D and Productivity Growth: A Review of the Literature”, Bureau of Labor Statistics Working Paper 408, September 2007.

⁷ Mercedes Delgado, Christian Ketels, Michael Porter and Scott Stern, “The Determinants of National Competitiveness”, NBER Working Paper 18249, July 2012.

⁸ Adam Jaffe, 1986, “Technological Opportunity and Spillovers of R&D: Evidence from Firm’s Patents, Profits, and Market Value”, American Economic Review, Dec 1986, pp. 984-1001, and Adam Jaffe, 1988, “Demand and Supply Influences in R&D Intensity and Productivity Growth”, Review of Economics and Statistics, August 1988, pp. 431-437.

FIGURE 4: PATENT INTERCONNECTIONS AMONG INDUSTRIES



Source: D. Acemoglu, U. Akcigit, and W.R. Kerr, 2016, PNAS, vol 113, No. 41, 11483-11488, October 11, 2016. Network Mapping of patent system using technology subcategories. Nodes of similar color are pulled from the same category of the United States Patent and Trademark Office (USPTO) system. The width of connecting lines indicates the strength of technological flows, with arrows being used in cases of strong asymmetry. Connections must account for at least 0.5% of out-bound citations made by a technological subcategory.

The thicker the connecting lines, the stronger the patent connections between the respective industries.

As Figure 4 reveals, the interconnections are vast. If one industry were to be removed successful R&D spillovers to other industries could diminish significantly. Another implication is that specialized economies will have few opportunities to take advantage of cross-industry technological spillovers. Of course, spillovers can also materialize across industries that operate in different countries. However, in this case, the spillover benefits may be significantly reduced, as much of the spillovers occur through labor mobility and in the context of agglomerations.

The above discussion suggests that countries with highly diversified industrial bases are much more likely to be able to directly and indirectly benefit from technological advances in other related industries. This may be

particularly important not only in a world of rapid technological advancements but also in one with rapid technological obsolescence.

Implications for Trade Agreements

The discussion in this paper so far has two relevant implications for trade agreements:

- a. Trade agreements should be structured in ways that allow a relatively broad industrial diversity in the economy to be maintained.
- b. In order to avoid the loss of technological spillovers that encourage productivity growth, trade agreements should discourage the migration to other countries of portions of highly interconnected industries.

If we were to use the above two observations as guiding principles for evaluating and negotiating international trade agreements, how would NAFTA and TPP fare?

The Case of NAFTA

The NAFTA agreement is credited with boosting GDP growth and reducing the prices of goods and energy for consumers in the trade area. However, these positive effects were not evenly spread out. While it created jobs in all three participating countries, it also led to painful job losses in particular industries and geographies. In the US for example, the job losses were concentrated in New York, Michigan, Texas and California and were the result of relocations of US plants to Mexico primarily in the automotive, textile, computer and electrical appliances industries.

Despite the localized negative effects on US employment in particular sectors, it is not clear that the net effect on long-term growth has been negative. In the case of Mexico, the types of activities that have been shifted south of the border have generally not been technologically complex and therefore, the potential loss of spillover effects is likely to have been minimal. This may change as the work force in Mexico becomes more skilled, and if more advanced operations that involve knowledge transfers get moved to Mexico down the road.

In the case of Canada, NAFTA has brought little change to the economic relations between the US and Canada, although it led to a significant reduction in the cost of mineral fuel imports to the US. However, going forward, the free trade agreement with Canada can pose a significant risk to US industrial diversity, productivity and long-term growth trajectory if changes in the US immigration law shift technologically intensive jobs to Canada. Such a development may disrupt existing knowledge centers and agglomerations and prevent the formation of new ones in the US. Based on the two criteria for trade negotiations we formulated above, the loss of spillover effects from knowledge formation can have significantly negative long-term effects on US growth.

The Case of TPP

The TPP is a proposed agreement that not only provides for free trade in goods and services, but also aims to strengthen intellectual property rights, and to harmonize a myriad of regulations concerning everything from sanitary practices to the existence and oversight of labor unions and other labor practices (e.g., child labor is forbidden). For the agreement to come into effect, it must be ratified by at least six of the proposed members that cumulatively represent 85% of the region's GDP. The proposed signatories are the US, Canada, Mexico, Japan, Vietnam, Singapore, Brunei, Australia, New Zealand, Chile, Malaysia, and Peru, which means that under the 85% rule, the pact cannot begin without the ratification of the US. As it is well known, the Trump Administration has pulled out of the TPP agreement.

While the stronger intellectual property rights that the partnership showcases, are, in principle a step in the right direction in terms of preserving industrial diversity in a country like the US, they may not be enough to avoid limiting any positive spillover effects or restricting US industrial clustering. Given the NAFTA agreement, and the geographic proximity of Mexico to the US, it is not clear that there are significant benefits for the US long-term economic growth in being part of TPP. It should be noted that one motivation for the TPP agreement was an effort by the signatory countries to contain the expansion of China's economic and political influence—China has been excluded from the agreement. In addition, an underlying intention may also have been to keep the signatory Pacific countries closer to the political orbit of the US. From a US perspective, the motivation for the pact may be more political and strategic in nature, rather than economic. However, the inclusion in TPP of technologically advanced countries, such as Japan, can potentially challenge US industrial diversity and the knowledge spillover effects it generates.

Conclusions

International trade is a complex topic that can be approached from many perspectives, each of which can generate a different set of positive and negative implications. In this essay, we do not attempt to provide a comprehensive discussion of international trade issues. Rather, by focusing on the narrow but important issue of what features of an economy support long-term growth, economic stability and foster productivity growth, we derive two implications that can be used as guiding principles in international trade negotiations. The ultimate conclusion that emerges from this analysis is that to the extent unfettered free trade reduces industrial diversity particularly in high technology areas, it may not promote long-term growth and economic stability. It can in fact be harmful to the long-term well-being of a country. The response should not be “no trade”. Rather, the focus should be in devising trade agreements that preserve the positive features of trade without harming the long-term trajectory of the country's economic growth. Our analysis finds merits in NAFTA but raises some caution about the agreement going forward. From our point of view, the advantages of TPP for a country like the US seem less obvious.

Political considerations, however, may ultimately dictate that NAFTA remains (largely) intact and that the US joins TPP. Nevertheless, the long run objectives of government policy, as detailed in this essay—the preservation of industrial diversity and economic clusters—should remain the same. How they are encouraged, however, may need to change. Direct government funding of basic and applied research may need to be increased dramatically if the appeal of conducting R&D offshore, in particular, becomes too strong. By enhancing research investment in this way, TFP and capital growth will increase, a fact that can only enhance investment returns more broadly.

Perella Weinberg Partners Asset Management

Perella Weinberg Partners Asset Management is a leading institutional asset manager. With approximately \$13.4 billion in assets under management and over 350 investors globally, the firm seeks to deliver a diversified suite of alternative investment strategies, as well as comprehensive investment solutions based on the outsourced CIO investment model. Perella Weinberg Partners Asset Management invests on behalf of pensions funds, endowments, foundations, sovereign wealth funds, family offices, high net worth individuals, and fund of funds, and the Firm invests in most major asset classes, including equities, fixed income, asset based securities, distressed securities, private investments, and real estate.

Maria Vassalou, Ph.D.

Partner & Portfolio Manager, PWP Global Macro

Maria Vassalou is Partner and Portfolio Manager for the PWP Global Macro strategy. Dr. Vassalou joined Perella Weinberg Partners from MIO Partners, a subsidiary of McKinsey & Company, where as a Portfolio Manager she managed a similar global macro investment strategy in a dedicated legal entity, and as Head of Asset Allocation she provided counsel on allocation for liquid assets within MIO's portfolio. Prior to joining MIO, Dr. Vassalou was a Global Macro Portfolio Manager at SAC Capital Advisors, LP. She joined SAC from Soros Fund Management where she was responsible for global quantitative research, as well as the development and management of global quantitative trading strategies. Prior to her career in asset management, Dr. Vassalou was an Associate Professor of Finance at Columbia Business School which she joined in 1995 and where she established many of the investment principles she employs today. Dr. Vassalou is a Past President of the European Finance Association and was the Chair of the 2008 European Finance Association Meetings. She has also served as a Research Affiliate of the Centre for Economic Policy Research (CEPR) in London for many years and is a past member of the Academic Advisory Board of the Vienna-based Guttmann Center of Competence in Portfolio Management. Her research focus has been on the interrelation of the macro-economy and financial markets with applications in hedge fund strategies. A frequent speaker to both academic and practitioner-oriented seminars and conferences, Dr. Vassalou has published in leading academic journals, such as the Journal of Finance, Journal of Financial Economics, Journal of Financial and Quantitative Analysis, Journal of Business, Journal of International Money and Finance, and the Journal of Economic Dynamics and Control. While she was on the faculty of Columbia University, she also served as a consultant to many premier hedge funds and asset management institutions in the U.S. and Europe. Dr. Vassalou received a Bachelor of Arts in Economics from the University of Athens and she holds a Ph.D. in Financial Economics from London Business School.

John Donaldson, Ph.D.

Mario Gabelli Professor of Finance and Economics, Columbia Business School

John Donaldson is the Mario Gabelli Professor of Finance and Economics at the Columbia Business School where he has been on the faculty for nearly 38 years. He has served as the Chair of the Finance and Economics Division of Columbia Business School, as well as the Director of the MBA Program. Professor Donaldson is an expert on dynamic equilibrium macroeconomic models and business cycle theory. A widely published author, his research contributions have appeared in leading academic journals such as the Journal of Economic Theory, Econometrica, and Review of Economic Studies, among others. Together with Jean-Pierre Danthine, he is the co-author of the Masters' level textbook "Intermediate Financial Theory". The recipient of various awards, Professor Donaldson has also received the Columbia University teaching excellence award which recognizes outstanding teaching performance at the pan-University level. Donaldson received his Ph.D. in Economics from the Graduate School of Industrial Administration at Carnegie Mellon University. Prior to entering the field of economics, Professor Donaldson academic training was on mathematics and probability theory in particular. He has also been involved in Silicon Valley startups and other entrepreneurial activities.

Legal Disclosures

The Information has been provided to you by Perella Weinberg Partners and its affiliates (collectively “Perella Weinberg Partners” or the “Firm” or “PWP”) solely for informational purposes and is not an offer to buy or sell or a solicitation of an offer to buy or sell any security or to participate in any trading strategy. If any offer of securities is made, it will be pursuant to the Confidential Offering Memorandum (the “Memorandum”) prepared on behalf of Perella Weinberg Partners which contains material information not contained herein and which supersedes this Information in its entirety. Any decision to invest in the investments described herein should be made after reviewing the Memorandum, conducting such investigations as the investor deems necessary and consulting the investor’s own investment, legal, accounting and tax advisors in order to make an independent determination of the suitability and consequences of an investment.

The Information including, but not limited to, Perella Weinberg Partner’s organizational structure, investment experience/views, returns or performance, risk analysis, sample trade plans, idea filtration process, benchmarks, investment process, investment strategies, risk management, market opportunity, representative strategies, portfolio construction, capitalizations, expectations, targets, parameters, guidelines, and positions may involve our views, estimates, assumptions, facts and information from other sources that are believed to be accurate and reliable and are as of the date this information is presented—any of which may change without notice. We have no obligation (express or implied) to update any or all of the Information or to advise you of any changes; nor do we make any express or implied warranties or representations as to the completeness or accuracy or accept responsibility for errors.

Perella Weinberg Partners and its affiliates do not provide tax advice. Accordingly, any discussion of U.S. tax matters contained herein (including any attachments) is not intended or written to be used, and cannot be used, in connection with the promotion, marketing or recommendation by anyone unaffiliated with Perella Weinberg Partners of any of the matters addressed herein or for the purpose of avoiding U.S. tax-related penalties.

Investing in financial markets involves a substantial degree of risk. Commodity interest trading involves substantial risk of loss. There can be no assurance that the investment objectives described herein will be achieved. Investment losses may occur, and investors could lose some or all of their investment. No guarantee or representation is made that the Funds’ investment program, including, without limitation, its investment objectives, diversification strategies, or risk monitoring goals, will be successful, and investment results may vary substantially over time. Additional information about individual holdings is available upon request. Investment losses may occur from time to time. Nothing herein is intended to imply that the Funds’ investment methodology may be considered “conservative,” “safe,” “risk free” or “risk averse.” Economic, market and other conditions could also cause the Funds to alter their investment objectives, guidelines, and restrictions.

Please refer to the Memorandum for more information on fees including early withdrawal charges and other important information. The investments discussed herein, including any pooled investment vehicle, may be speculative and involve a high degree of risk; could involve possible loss of your entire principal; may be leveraged which can potentially increase investment risk; may have volatile performance; can be highly illiquid and investors may be required to retain their exposure to investments for an indefinite period of time; do not have a secondary market for the investor’s interest and none is expected to develop; may have restrictions in transferring interests of the assets; may not be required to provide periodic pricing or valuation information to investors; may include international investments that are subject to political influences, currency fluctuations and economic cycles that are unrelated to those affecting the domestic financial markets and may experience wider price fluctuations; are not subject to the same regulatory requirements as mutual funds; may involve complex tax structures and delays in distributing important tax information; and, may have high fees and expenses offsetting profits.