The Export-Import Bank's Vital Role in Supporting U.S. Traded Sector Competitiveness

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In 2013, the U.S. Export-Import Bank supported $37.4 billion of U.S. exports, which supported approximately 205,000 U.S. manufacturing jobs.

The U.S. Export Import Bank (Ex-Im Bank) plays a vital role in fostering U.S. traded sector competitiveness and facilitating exports of innovative U.S. products and services to foreign markets. In 2013, the Ex-Im Bank supported over 200,000 jobs and $37.4 billion in U.S. exports, many of which would not have been possible without Ex-Im Bank assistance. However, despite the considerable benefits of providing its services at no cost to the American public, the Ex-Im Bank has fallen under intense ideological attack from those who label its assistance as "crony capitalism." Other groups have made unsubstantiated claims that Ex-Im Bank export credit assistance distorts capacity in global markets. But these claims are fallacious and are designed to obscure the instrumental role the Ex-Im Bank plays in supporting U.S. manufacturing and services exports.

INTRODUCTION

As the official export credit agency (ECA) of the United States, the U.S. Export-Import Bank plays a vital role in ensuring the global competitiveness of U.S. exporters. The Ex-Im Bank fulfills two critical functions in particular. First, the Ex-Im Bank steps in to provide financing or insurance (in the form of loan guarantees, insurance coverage, direct loans, or working capital guarantees) for export transactions that might not otherwise occur when private commercial lenders are unable or unwilling to provide financing to foreign purchasers of U.S. exports. Second, the Ex-Im Bank plays a key role in leveling the playing field for U.S. exporters by matching the credit support that other nations provide, ensuring that U.S. exporters are able to compete based upon the price and performance features of

their products.[1] The Ex-Im Bank's importance in this regard has only increased in recent years as global export credit competition has intensified, with a growing number of nations investing significantly more than the United States as a share of GDP in export finance.

Unfortunately, the Ex-Im Bank is under assault like never before. Some have argued that Congress should disband the Export-Import Bank because it constitutes an unnecessary, distortive government intervention in financial markets. In what is largely an ideological argument, many opponents claim that completely "free-market" outcomes would be better for America, even if those outcomes entail higher trade deficits and fewer jobs in higher-wage export industries, which indeed would be the outcome if the Ex-Im Bank were disbanded.[2]

But other opponents object to the Ex-Im Bank out of self-interest rather than ideology. In particular, Delta Airlines has argued that the Ex-Im Bank unfairly subsidizes its competitors when, for example, foreign airlines which compete with Delta are able to finance purchases of U.S.-manufactured airplanes in part through U.S. Ex-Im Bank-provided export credit financing. But while Delta argues that this enables foreign airlines to receive credit at below-market rates, the reality is that the export credit financing the Bank provides is substantially at market. Another objection Delta Airlines has raised is that export credit financing can lead to overcapacity of aircraft in global aviation markets, again arguing that the Ex-Im Bank makes possible more financing of aircraft (and thus more capacity) in the global aviation industry than would otherwise be the case (i.e., if financing were provided only by private sector actors). But, as this report argues, there is scant evidence that the global aviation industry is in a state of persistent structural overcapacity and, moreover, there is little compelling evidence that the export credit assistance extended by the Ex-Im Bank has contributed in any significant way to global aviation industry overcapacity.

In short, the Ex-Im Bank remains a vital institution supporting exports and jobs from the traded sectors of the U.S. economy (i.e., industries that sell goods or services globally, as opposed to just nationally). This report proceeds by explaining the U.S. Export-Import Bank's vital role in supporting U.S. traded sector competitiveness (including addressing several critiques of the Bank's role in this capacity). It then documents intensifying global export credit competition, and assesses whether or not the global aviation industry is in a state of overcapacity, and if so, whether the Ex-Im Bank's provision of export credit finance has played a role in contributing to such overcapacity.

THE EX-IM BANK'S ROLE IN SUPPORTING U.S. TRADED SECTOR COMPETITIVENESS

By definition, countries that wish to successfully compete in the global economy must have highly competitive traded sectors. The U.S. Export-Import Bank's role is to facilitate the competitiveness of U.S. industries, enterprises, and establishments (an establishment being the factory, office, or other facility of a business enterprise) that compete in traded sectors of the global economy. A nation's traded sector comprises those industries and establishments which compete in international marketplaces and whose output is sold, at least in part, as exports to consumers or businesses in other nations. Virtually all of a

nation's manufacturing and production industries—such as aircraft, automobiles, capital equipment, heavy machinery, semiconductors, and medical devices—compete in globally traded sectors. These high value-added, export-intensive industries are particularly important to the U.S. economy because they support above-average paying jobs and account for the preponderance of U.S. exports.[3] In fact, manufacturing accounts for 57 percent of exports and such export-intense U.S. manufacturing enterprises support some of the highest-wage jobs in the economy, in part because exports contribute an additional 18 percent to manufacturing workers' earnings.[4] And among U.S. traded sectors, the aerospace industry is one of the highest value-added, export-intense, and highest paying. Indeed, the aircraft manufacturing sector is America's largest net exporter, recording a trade surplus of $71.1 billion in 2012.[5] As of May 2013, the U.S. aerospace manufacturing sector employed over 500,000 workers.[6] And the value-added per worker in the U.S. aerospace industry (that is, the amount of value that each worker adds to the materials and parts they manipulate) is among the highest of any industry. In fact, workers in the U.S. aerospace industry generate approximately 30 percent greater value-added than produced by U.S. workers on average.[7]

On average, 7,400 U.S. jobs are created by every $1 billion worth of exports supported by the U.S. Ex-Im Bank.

But despite the vital importance of America's traded sectors, too many policymakers and economists are indifferent to the industrial and value-added composition of America's economy. For these critics, the actual industrial composition of an economy is irrelevant, a sentiment perhaps best captured in the statement of Michael Boskin, former head of then-President George H. W. Bush's Council of Economic Advisors: "Potato chips/computer chips, what's the difference? A hundred dollars of one or a hundred dollars of the other is still a hundred dollars."[8] Yet, there is a profound difference. First, some industries, such as semiconductors, can experience very rapid growth, sparking the development of related industries and increasing productivity in other sectors. Second, as noted, jobs in such high-tech industries require a higher skill level and thus pay more than most other jobs. Third, if a country loses key traded sector industries—such as its computer chip or jet aircraft manufacturing industries—to foreign competitors, that value disappears as the industry's supply chains and industrial commons get hollowed out.

Indeed, as ITIF writes in *50 Ways to Leave Your Competitiveness Woes Behind: A National Traded Sector Competitiveness Strategy*, policymakers must be particularly attuned to the health of a country's traded sectors precisely because these industries face market competition that is global in nature in a way that non-traded, local-serving industries (e.g., grocery stores and regional airlines) do not, meaning that their success is by no means assured.[9] For example, while we may not know whether Giant, Safeway, or Walmart are going to gain market share in the U.S. grocery store industry—or whether Allegiant, Frontier, or Hawaiian will gain the most market share in the regional airline industry—we do know that these industries will be healthy and respond to local market demand, dependent only on the income and purchasing habits of American consumers. On the other hand, while we may not know whether Airbus or Boeing are going to gain market share in the global aircraft industry, we also do not know whether there will be aviation industry jobs in the United States, since this depends on the nation winning in global competition in the industry. Put simply, if a grocer or a regional airline goes out of business, another will emerge to take its place to serve local demand. But if a traded sector

enterprise, such as Boeing or Intel, loses significant global market share or closes, the enterprise that takes its place—and the production jobs that enterprise supports—may well be located in another country. And if these firms lose out on sales overseas—for example, if would-be buyers cannot secure financing for a potential purchase—not only might these firms cut jobs at home, but their suppliers (and their suppliers' suppliers) might do so as well.

Some, such as *Washington Post* columnist Charles Lane, have contended that if the Ex-Im Bank didn't assist manufacturing firms such as Boeing, Caterpillar, or General Electric (GE), the U.S. economy "might have created the same number of jobs, or more, at other firms."[10] And while this might be true if we were dealing with firms in non-traded industries, it's simply not true when dealing with high value-added, high-paying industries and enterprises that compete intensely in global markets, export much of their production, and support thousands of jobs at downstream supplier companies. In other words, traded sectors comprise distinct components of a country's economy, and they deserve distinct policy instruments and measures to support them.

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The Ex-Im Bank's support for the export activities of U.S. enterprises competing in traded sectors makes it a vital institution bolstering U.S. economic competitiveness. In fiscal year (FY) 2013, the Ex-Im Bank authorized $27 billion in export credit authorizations which supported an estimated $37.4 billion in U.S. export sales, including aircraft, power-generation equipment, and oil and gas projects, among others.[11] Such exports supported by Ex-Im Bank activities lead directly to U.S. jobs. In fact, since 2009, the Bank has supported 1.2 million private-sector U.S. jobs, including 205,000 jobs in 2013 alone.[12] On average, 7,400 U.S. jobs are created by every $1 billion worth of exports supported by the U.S. Ex-Im Bank.[13]

While some have charged that the Ex-Im Bank supports only "big business," the reality is that the Ex-Im Bank's export credit assistance plays an indispensable role in directly supporting America's small- to medium-sized (SME) manufacturers as well, through two channels. First, when a large U.S. company successfully exports a jet aircraft, locomotive, or wind turbine, it's effectively exporting tens of thousands of assembled parts contributed by thousands of U.S. SMEs. In other words, when foreign purchasers of Boeing aircraft receive export credit assistance, it's not just Boeing that benefits, but also the 15,600 suppliers—6,600 of them SME manufacturers—comprising Boeing's extensive value chain involved in contributing to the production of Boeing aircraft in the United States. Moreover, in FY 2013, 90 percent of the transactions financed by the Ex-Im Bank directly supported SME businesses, as the Ex-Im Bank helped over 3,400 U.S. SMEs launch or expand their export activities.[14] In fact, between the Ex-Im Bank's direct support for SMEs and support for exports of larger companies that rely on a vast national network of suppliers, the Ex-Im Bank supported the exports of at least 33,000 small businesses in 2013. Moreover, the Bank has financed more small business exports in the last five years than it did in the previous 11 years combined.[15] Thus, whether it's through directly supporting U.S. SME manufacturing exporters or supporting SMEs that supply inputs and components to finished products exported by larger companies, export credit financing is

vital to supporting the competitiveness of America's 264,000 SME manufacturers, and to ensuring healthy value chains across the entire U.S. manufacturing industry.[16]

Nevertheless, some have charged that the Ex-Im Bank's activities occur at the expense of "taxpayers who are forced to subsidize corporate profits."[17] Yet the reality is that America's taxpayers are actually the beneficiaries of the Ex-Im Bank's activities. First, the Ex-Im Bank operates at no cost to the U.S. Treasury. And while some have argued that taxpayers are significantly exposed because they may have to cover for defaulted loans, the Ex-Im Bank's default rate in FY 2013 was just 0.211 percent—less than one-quarter of 1 percent.[18] In fact, the Ex-Im Bank has earned $2 billion more than the cost of its operations after covering loan loss reserves over the past five years.[19] The Ex-Im Bank has actually returned these funds to the U.S. Treasury, helping to reduce the federal deficit. Taxpayers also benefit from the Ex-Im Bank's activities if they happen to work at one of the roughly 3,500 firms receiving Ex-Im financing, at those firms' suppliers, or at a business in a community where an Ex-Im beneficiary firm or supplier is located. But even if they don't, they benefit because the exports and high-wage jobs the Ex-Im Bank supports contribute to a larger U.S. economy and engender higher total U.S. tax revenues and lower government costs (e.g., unemployment insurance).[20]

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Finally, as PricewaterhouseCoopers (PWC) writes in its 2013 report, *Aviation's Second Golden Age*, "a common misconception [about] the Ex-Im Bank is that it provides financing at better-than market rates, which is not true."[21] As PWC notes, while the Ex-Im Bank is a "lender of last resort," its rates are substantially "at-market."[22] The report also discusses how countries' export credit agencies, including America's Ex-Im Bank, have played an important role in helping smooth out periods of financial market disruption. For example, as Kostya Zolotusky, Managing Director of Capital Markets and Leasing for Boeing Capital Corporation, notes, "during the 2008–2009 financial crisis, when the Bank stepped in with loan guarantees for [foreign] buyers, Boeing was able to continue to satisfy airline demand for new fuel-efficient airplanes at a time when commercial lenders were not in a position to lend. Decoupling large-scale manufacturing from finance market volatility is integral to a viable manufacturing base."[23] As Zolotusky continues:

> Without Ex-Im supporting airplane exports, the U.S. aerospace industry will be at a disadvantage to foreign competition which has committed support from their nations' export credit agencies. Limitations on the Ex-Im Bank will not benefit any constituents, while putting at risk some 1.5 million U.S. aerospace jobs and compromising the long-term viability of this currently very successful sector. If foreign airlines cannot depend on Ex-Im support, they will simply compete against U.S. airlines using Airbus airplanes. To be competitive globally, we must recognize the global rules. It's about fair competition and a level playing field.[24]

FOREIGN EXPORT CREDIT COMPETITION IS INCREASING

Unfortunately, despite the critical role export credit finance plays in helping to boost America's exports and empower its traded sector competitiveness, the *2014 Report to the U.S. Congress on Export Credit Competition and the Export-Import Bank of the United States*

documents clearly how virtually all U.S. competitors are investing significantly more as a share of their GDP than the United States in providing export credit assistance in the form of loans and guarantees to help foreign buyers purchase their nations' products and services. In fact, as Figure 1 shows, virtually all of the world's leading export economies—including the ones which U.S. manufacturers compete most closely against—invested more in new export credit assistance as a share of their economy than the United States did in FY 2013. For example, China's investment in new medium- and long-term export credit assistance exceeded the United States' by 5.7 times in FY 2013, while Germany's level outstripped the United States' by over 7 times. Korea invested 14 times as much as the United States in export credit assistance in FY 2013.[25] Moreover, in FY 2013, the United States ranked just fourth in terms of new medium- and long-term export credit issued. In current dollars, China's $45.5 billion in new export credit was three times greater than that of the United States' $14.5 billion, while Germany's investment of $22.6 billion and Korea's of $14.8 billion also exceeded that of the United States in current dollars.

The Ex-Im Bank's importance has only increased in recent years as global export credit competition has intensified, with a growing number of nations investing significantly more than the United States as a share of GDP in export finance.

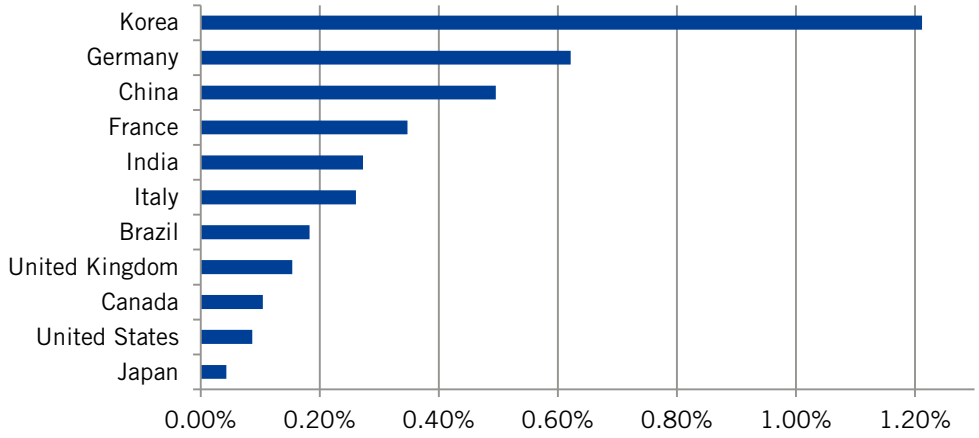

Figure 1: New Medium- and Long-term Official Export Credit Volumes, 2013 (as a share of 2013 GDP)[26]

And those figures only reflect FY 2013 new medium- and long-term official export credit volumes. Examining cumulative investment over the past six years (FY 2008 to FY 2013) reveals that China has invested twice as much in new medium- and long-term export credit as the United States in current dollars, and almost four times as much as a share of GDP over this period, as Figure 2 shows. And while the United States and Germany committed roughly the same amount of export credit assistance over this period (the United States investing $108.2 billion to Germany's $107.1 billion), the reality is that Germany's relative investment is almost five times larger than the United States' because U.S. GDP is 4.6 times greater than Germany's. Simply put, these countries are investing substantially more as a share of their economy to support the exports of their companies' products and services.

Another sign of the intensifying global competition surrounding export credit financing is that 60 nations throughout the world now operate export credit agencies.[27] Much of this export credit is coming from Asia, and particularly China. On total, export credit authorizations originating from Asia grew more than 275 percent from 2008 through

2012.[28] And, unfortunately, the *2014 Report to the U.S. Congress on Export Credit Competition* reveals that unregulated export credit competition has significantly expanded. In fact, whereas 15 years ago 100 percent of countries' official export credit assistance operated under international rules established through the Organization for Economic Cooperation and Development (OECD) to ensure that companies could compete on free-market factors such as price and quality rather than on aggressive government financing, in FY 2013 that figure plummeted to 34 percent.[29] In other words, only $97 billion of the total $286 billion in new export credit issued by countries worldwide last year was governed by global rules. Much of this growth in unregulated export credit came from the "BRIC" countries—Brazil, Russia, India, and China—which are not subject to the OECD framework regulating export credit, and which often aggressively use export credit to support exports from their state-owned enterprises (SOEs). As *The Economist* notes, "China regularly offers easier terms than the OECD arrangement would allow. And adding in untied aid, project finance, and other surreptitious forms of export credit boosts [China's] total to $111 billion, more than a third of the global total."[30] As the *Financial Times* explains, these figures "show how the rise of emerging exporters such as China—which have not signed up to international rules designed to limit export credit—threatens a new form of mercantilism as countries use cheap finance to boost their industries."[31]

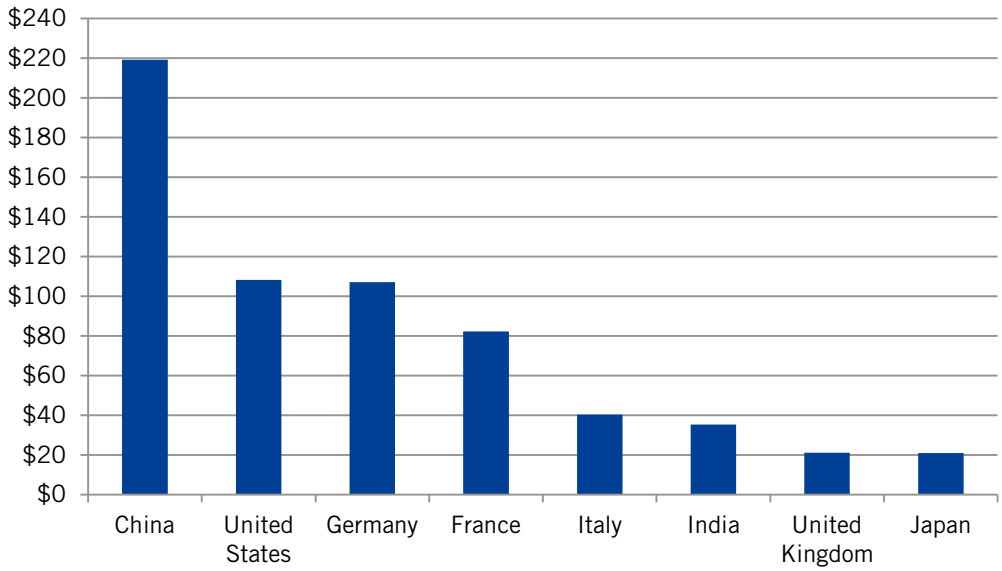

Figure 2: Cumulative New Medium- and Long-term Official Export Credit Volumes, 2008-2013 (billions)[32]

In short, the latest data convincingly show that export credit competition is not going away—in fact, it is *increasing*—and demonstrate the folly of those who would advocate that the United States unilaterally end the provision of export credit assistance. Yet amazingly, some argue that the country should just accept foreign governments' aggressive use of export credit finance as a *fait accompli* and proceed with eschewing our own use of export credit. For example, *The Economist* argues that "unless foreign subsidies create some market failure (by threatening to destabilize an industrial cluster for instance) the least harmful course of action may be to accept the foreign government's largesse."[33] Similarly, others have argued that "while the administration argues that we need to increase funding for Ex-

Im to match increased export credit activity by countries such as China, allowing Beijing to set the terms and pace of export credit policy in the United States is foolhardy at best."[34] But while we may not like the fact that other countries are aggressively using export credit instruments (and while America should seek to impose disciplines on their use, including by bringing more countries into the OECD arrangement), the fact is that intense export competition is a global reality. As former U.S. Treasury Secretary Larry Summers correctly warns, "Only by maintaining a capacity to counter foreign subsidies can we hope to maintain a level global trading system and to avoid ceding ground to mercantilists. Eliminating the Export-Import Bank without extracting any concessions from foreign governments would be the economic equivalent of unilateral disarmament."[35] If the United States does not provide export credit assistance to foreign purchasers of U.S. products and services in situations where private sector lenders are unable to do so, the simple reality is that in many cases these would-be buyers will turn to European or Asian manufacturers, getting the export credit assistance required from a European export credit agency or from the Chinese Export-Import Bank. This means sales of U.S. Boeing jets would be replaced by sales of Airbus jets, or sales of GE locomotives would be replaced by locomotive exports from Germany's Siemens or China's China South Railway (CSR).[36]

If the United States does not provide export credit assistance to foreign purchasers of U.S. products and services in situations where private sector lenders are unable to do so, the simple reality is that in many cases these would-be buyers will turn to foreign manufacturers.

This was amply demonstrated in a recent case in which Airlines for America (A4A, previously called the Air Transport Association of America) filed suit to block the Ex-Im Bank from providing $3.4 billion in loan guarantees for aircraft financing to Air India to complete a purchase of 30 aircraft. A4A argued that the Bank's guarantees could give Air India a competitive advantage in aircraft financing markets that could enable it to expand its international routes, thereby harming U.S. airlines' market share. A4A asserted that "if Air India places just one new Bank-backed aircraft into service pending resolution of this suit, U.S. airlines will be forced to cut routes, cut capacity on other routes, and lay off employees."[37] Fortunately, the U.S. District Court where the case was filed dismissed the motion for injunctive relief, for the reality is that, had A4A prevailed, the U.S. aerospace sector and aerospace employment would have been harmed, but U.S. airlines would have been no better off. The simple truth is that even if A4A were to have prevailed in its lawsuit against the Ex-Im Bank and successfully enjoined the Bank from providing the $3.4 billion in loan guarantee assistance to Air India, it would have done absolutely nothing to relieve the competition that domestic U.S. airlines face from Air India on international routes. For Air India—just like any other foreign airline that wishes to buy U.S. jet aircraft but that is unable to secure loan guarantee assistance from the U.S. Export-Import Bank—would simply have turned to an alternative foreign supplier, in this case Airbus, knowing that they would be able to secure European export credit agency financing backed by the governments of France, Germany, Spain, and the United Kingdom. In short, if A4A's action were to have succeeded, American aerospace workers would certainly have lost jobs while U.S. airline employees would have still faced the exact same level of competition from foreign carriers on international routes. Such an outcome would have only served to damage prospects of bolstering U.S. employment, not to mention U.S. exports. For as PricewaterhouseCoopers frames it, "For U.S. commercial aircraft makers and their suppliers, prospects for exporting aircraft will likely only be as strong as buyers' abilities to finance purchases."[38]

In summary, the Export-Import Bank plays a vital role in supporting the competitiveness of traded sectors of the U.S. economy. And while, as noted, most U.S. traded sectors relate to manufacturing, several are in globally traded services industries. These include industries such as: software; Internet-based digital services; engineering, professional, and technical services; and entertainment content such as music, movies, and video games.[39] Yet in FY 2012, just 14 percent of the Ex-Im Bank's new credit authorizations were directed toward services sectors.[40] The United States actually needs more export credit support for services-based industries such as software, not less export credit assistance overall. While it's easier to quantify the man-hours involved (i.e., jobs supported) in producing manufactured items for export as opposed to intellectual-property-based exports such as software, these are still important employment- and export-producing components of the U.S. economy that deserve greater levels of export credit support.

THE IMPACT OF EXPORT CREDIT ON AVIATION INDUSTRY CAPACITY

As part of the Export-Import Bank's charter, the Ex-Im Bank is required to determine whether or not "long-term structural oversupply" exists in world air transport markets, understood as a "long-term chronic excess of supply compared to demand" as a result of *non-market* factors.[41] The intent is to ensure that Ex-Im lending does not produce adverse "second-stage" impacts on other sectors, such as the U.S. airline industry. In 2012, the Ex-Im Bank engaged the aviation consultancy ICF International to undertake an evaluation of whether the global passenger airline industry was currently in, or anticipated to be in over the years 2013-2015, a state of "structural oversupply."[42]

As ICF International's report, *Economic Impact Analysis for Aircraft Financial Report: Evaluation of Structural Oversupply in Global Airline Industry*, explains, for "long-term structural oversupply," as defined by the U.S. Ex-Im Bank, to exist, it must be driven by major, long-term, non-market influences on a global basis.[43] To meet this criteria:

1. "Long-term structural overcapacity" must result from *non-commercial influences* and *non-market factors* including "government actions such as subsidies" or route allocations, but be distinct from normal business-cycle driven factors;

2. The impact of such *non-commercial influences* must be large enough that over the long term, global capacity stabilizes at a level well-above that warranted by long-run market forces. The impact on the global industry must be adverse, dominant, and significant; and

3. The impact must be long-term and sustained (e.g., persist at least 10 to 15 years).[44]

In its analysis, ICF International found that "while some non-market government interventions in the air transport industry do occur which could cause structural overcapacity in certain world regions and markets, non-market interventions, when taken collectively, are not likely to cause a dominant, significant and adverse long-term impact on oversupply on the global air transport during the 2013-2015 period."[45] In other words, their exhaustive review found that the global passenger airline industry would not suffer from overcapacity resulting from non-market forces in the years 2013-2015. There is also

scant evidence that the Ex-Im Bank's lending practices have injured specific airlines or employment thereat. As the *2014 Report to the U.S. Congress on Export Credit Competition* notes, "Since implementing the new [economic impact review] procedures [in 2010], no aircraft transaction has been found to be likely to cause a significant adverse economic impact on U.S. airlines or U.S. employment."[46]

Nevertheless, some opponents of the Ex-Im Bank persist in charging that the Bank's provision of export credit finance beyond levels private markets would otherwise support has contributed to a glut of finance in the aviation industry, in turn contributing to aviation industry overcapacity. Yet there is scant evidence that the global aviation industry is mired in a state of sustained structural overcapacity. There is even less evidence that the U.S. Ex-Im Bank's provision of export credit finance has contributed to an overcapacity situation. The following section responds to those arguments by: 1) examining what constitutes overcapacity in an industry; 2) examining the past, current, and future states of capacity in the global aviation industry; and 3) responding to specific arguments made by proponents of the argument that Ex-Im lending contributes to aviation industry overcapacity. Like ICF International, our analysis finds that the global aviation industry is not in a state of persistent, long-term structural overcapacity, whether caused by market or non-market forces. Further, we do not find evidence that Ex-Im lending has contributed to significant aviation industry overcapacity.

There is scant evidence that the global aviation industry is mired in a state of sustained structural overcapacity and even less evidence that Ex-Im Bank lending has contributed to supposed aviation industry overcapacity.

What Constitutes Overcapacity in an Industry?

Overcapacity represents an imbalance between supply and demand in an industry. After either an upward shock to supply or a downward shock to demand, industries can find themselves with an excess of supply, or overcapacity. Firms in the industry will be forced to lower prices to attract now-scarce consumers, lowering their profits. Lowered profits create incentives for firms to decrease production, shifting their position along the supply curve and establishing a new market equilibrium.

The speed at which this process occurs in the marketplace can be hindered by barriers to exit, firms' willingness to take losses in an effort to force competitors to sacrifice market share, immobility of fixed investments, and structural time lags in decisions regarding supply. All of these factors combine to make supply "sticky," which can slow the shift along the demand curve and cause temporary disequilibrium in a market, creating overcapacity. But while these barriers can delay shifts in supply, they cannot halt them completely. Markets will eventually win out, and capacity will adjust to match demand.

True overcapacity—that is, chronic and consistent excesses of supply in industries over a long time period—are caused by an inability or unwillingness to adjust supply. In some cases, state actors looking to secure or maintain footholds in industries for nationalist or political reasons can prop up unprofitable industries and cause excess capacity in markets. In other cases, firms in an industry may be unable to decrease their supply, whether because of long-term planning horizons or because of high levels of fixed, immobile investments. Alternatively, firms may have extremely low marginal costs when operating at full capacity, making cutting supply unprofitable despite shrinking demand. In other cases, companies competing for inroads into valuable markets may maintain an overabundance of

supply in an attempt to "outlast" competitors and remain the last firm standing. In each case in which firms are responding to economic pressures, the industry will eventually fluctuate back to equilibrium. Firms trying to outlast each other will crown a champion. Unprofitable firms trying to maintain market share will eventually be forced to either restructure or to go out of business, effectively reducing supply. Firms with long-term planning horizons will be able to make corrections to supply on a lagged time frame.

To differentiate between chronic long-term overcapacity and short-term, cyclical overcapacity, one can compare the crude steel manufacturing industry, which suffers from chronic, long-term overcapacity, to the dry bulk shipping industry, which suffers from short-term overcapacity brought on by demand shocks and long-term planning horizons.

The rapid growth in global steel-producing capacity can be particularly attributed to certain governments' strong support for SOEs and other domestic businesses. Economies of scale and high fixed costs give advantages to producers that already have high production ceilings, so producers delay reducing output even when producing at a loss. However, with regard to global steel production, virtually all the global capacity growth in the last 30 years has originated from China, which more than tripled production of crude steel via a number of state-controlled mills that overinvested "regardless of market fundamentals" despite frequently operating at a loss.[47] Meanwhile, production elsewhere has remained stable since the 1980s. Most importantly, current capacity utilization of steel mills stands at just 75 percent, down from approximately 85 percent from 2004 to 2007. In 2013, crude steel experienced excess global capacity of 517 million metric tons.[48] Here, a clear non-market force—investment by Chinese non-market actors willing to suffer unprofitability to win market share—created excess capacity.

Overcapacity in the dry bulk goods shipping industry is much more comparable to airline capacity than is steel production. As with airlines, an imbalance of supply and demand resulting in temporary overcapacity can be rectified with adjustments to global fleet size. While the global supply of new dry bulk vessels averaged 12 percent growth from 2009 to 2012, that number is predicted to drop to 1 percent in 2014. Merrill Lynch estimates that demand growth will overtake capacity by 2015 to start correcting the supply and demand equilibrium in the industry.[49] In this case, overcapacity was caused by delays in orders for new vessels and delivery. With an industry lag of several years, the market is now adjusting its supply to make up for the severe drop in demand brought on by the global recession.

In the airline industry, capacity utilization has steadily increased in recent years, state actors have had little impact on levels of capital expenditure investments, and air carriers across the market are expanding based on their own levels of profitability. This sharply contrasts with the imbalanced and unprofitable growth experienced by the global steel industry. The global shipping industry tells a similar story to the airlines' reaction to demand shocks, but in sharper relief as orders for new dry bulk good vessels take even longer to fill than orders for new aircraft. In each case, firms adjusted capital expenditures downward after a demand shock to constrain supply, match supply to demand, and correct for overcapacity.

It's true that the global airline industry has experienced a difficult 15 years. American carriers were particularly hard hit by demand shocks in 2001 following the September 11

attacks and the SARS virus outbreak, and in 2008 following the recession. In both of these cases, airlines had to adjust to unexpected losses in demand. Given the nature of the long-term planning horizons in the airline industry, reactions in limiting supply lagged by several years, as planes ordered before the shocks occurred continued to roll off of assembly lines to create short-term periods of overcapacity before the market could adjust. Moreover, consumers increasingly opted for less-expensive flights from low-cost carriers, intensifying the demand shock for legacy airlines. According to Severin Bornstein, "major drivers [of excess supply] seem to be the severe demand downturn after 9/11—demand remained much weaker in 2009 than it was in 2000—and the large cost differential between legacy airlines and the low-cost carriers, which has persisted even as their price differentials have greatly declined."[50]

Throughout this report, we argue that despite sometimes-low profits, global airline industry capacity is responsive to market pressures and signals. While market lags and long planning horizons delay reactions to demand shocks, they do indeed occur: carriers are willing and able to make downward adjustments to the number of flights they offer. Moreover, over a period of almost half a century, global fleet growth has occurred in accordance with increases in global demand. In short, the airline industry does not have a chronic overcapacity problem perpetuated across multiple business cycles.

Global airline industry capacity is responsive to market pressures and signals; the industry does not have a chronic, structural overcapacity problem perpetuated across multiple business cycles.

Does the Global Aviation Industry Suffer from Structural Overcapacity?

A perennial debate exists in the air transport industry regarding the proper balance between the supply and demand of capacity, and whether or not the industry operates in a state of overcapacity. Supply and demand in the global aviation industry—as in any industry—exists in a constant state of flux and continuous correction, as the capacity supply constantly attempts to adapt to ever-changing demand via a variety of means, from demand stimulation and revenue management to network optimization to fleet management.[51] Therefore, to understand if an industry is suffering from overcapacity, it's necessary to establish parameters for normal fluctuations in the supply-demand balance in the industry (i.e., to identify historical normal operating parameters for the industry) and then to assess whether conditions deviate from these patterns on a sustained basis.

The key instrument of capacity in the global aviation industry is the aircraft, yet there are several ways to measure capacity in the global aviation industry. The most important measures of capacity are:

1. Available seat kilometers (ASKs), or the total number of seat kilometers the world's airlines have available to fly. The ASK growth rate effectively measures the rate of change in the supply of airline capacity;
2. Revenue passenger kilometers (RPKs), which measures total passenger kilometers flown;
3. Passenger load factors (PLFs), which measures the proportion of the network capacity filled by ticket-purchasing passengers (i.e., demand) as compared to the supplied capacity (i.e., available seat kilometers);
4. Fleet size, which measures the rate of change or net growth of the commercial fleet size.

Perhaps the strongest evidence that the global aviation industry is not suffering from sustained structural overcapacity is that over the past decade global airlines' ASKs have grown strongly in-line with RPKs traveled. As Figure 3 shows, over the past decade RPKs traveled has grown from 3.5 trillion in 2004 to 5.6 trillion in 2013 (and is expected to grow to 6.3 trillion kilometers by 2015). Figure 3 further plots the year-over-year (YoY) changes in RPKs traveled over the past decade, which reveals a steady 6.17 percent 10-year compound annual growth rate (CAGR) in RPKs traveled despite the severe negative shocks suffered in the 2008 global recession.

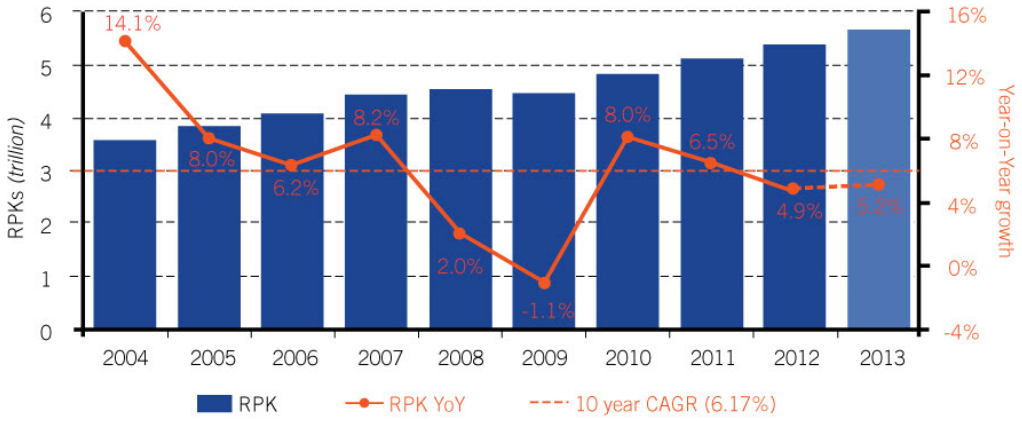

Figure 3: World RPK Growth and Year-on-Year Percentage Growth Rates, 2004-2013[52]

Perhaps the strongest evidence that the global aviation industry is not suffering from sustained structural overcapacity is that over the past four decades global airlines' ASKs have grown strongly in-line with RPKs traveled.

Growth in revenue passenger kilometers flown has increased virtually hand-in-hand with the growth of available seat kilometers over the past decade. Figure 4 plots the amount, year-over-year growth rates, and 10-year CAGR for ASKs in the global aviation industry. As Figure 4 shows, from 2004 to 2013, global ASKs grew from 4.8 trillion to 7.2 trillion. This translates to a compound annual growth rate of 5.1 percent over this period, suggesting that growth in ASKs has occurred in balance with growth in RPKs flown. Moreover, as Figure 5 shows, stretching the relationship between ASK and RPK growth rates back to 1970 reveals that ASK growth has increased on average 5.2 percent per year over the past 40 years. Put simply, over the past four decades, the growth of ASKs has occurred in virtual lock step with the growth in RPKs, which is certainly indicative of supply expanding in concert with the increasing global demand for air travel.

Moreover, over the past 40 years, the world's airlines have also grown steadily better at managing their existing capacity, as reflected in steadily increasing passenger load factors, or the percentage of paying passengers the average flight carries. As Figure 6 illustrates, global annual PLFs have increased by almost 35 percentage points over that time, increasing from an average of 55 percent in 1970 to almost 80 percent by the early 2010s. This translates to sustained average annual growth in PLFs of approximately 0.9 percent per year over 40 years.[53]

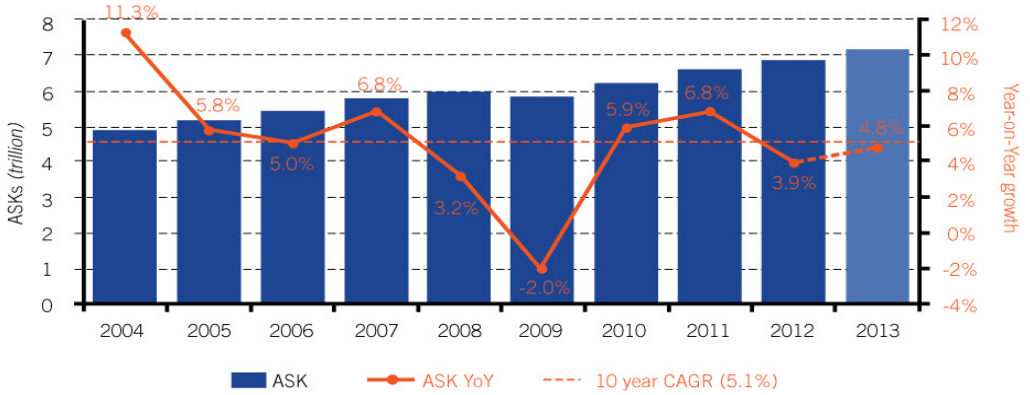

Figure 4: World Available Seat Kilometers Percent Growth, 2004-2013[54]

To be sure, the steady increases in PLFs are attributable to several factors, including airlines' increased yield management practices, better management of seasonality in the industry, and better aligning types (i.e., sizes) of aircraft used to service particular route combinations.[55] Indeed, airlines' ability to measure, predict, and manage capacity has become increasingly sophisticated as science, technology, and operations research have evolved with complex algorithms built into operational management tools.[56] Nevertheless, a key reason why PLFs have increased is also because airlines are doing a better job of managing overall capacity in the global airline industry, and the increasing efficiency of aircraft usage is another sign that the global aviation industry is not in a state of structural overcapacity. As PricewaterhouseCoopers' 2013 report *Aviation's Second Golden Age* concurs, "the U.S. airline industry has become better at managing capacity." The report notes that U.S. airlines' "load factors have increased by almost 4 percent since 2008 alone due to better capacity discipline and reduced supply."[57] At the same time, while innovation has increased PLFs, the increase is also due in part to demand for air travel outstripping the industries' increase in supply. Increased passenger numbers allow airlines to fully utilize economies of scale, improving efficiency and cutting costs. In short, steadily increasing load factors are emblematic of an industry that is effectively managing capacity. If the industry were in a state of overcapacity, one would expect PLFs to be declining (i.e., passengers to be spread across too many aircraft), not steadily increasing and increasing in-line with historical trends dating back over 40 years.

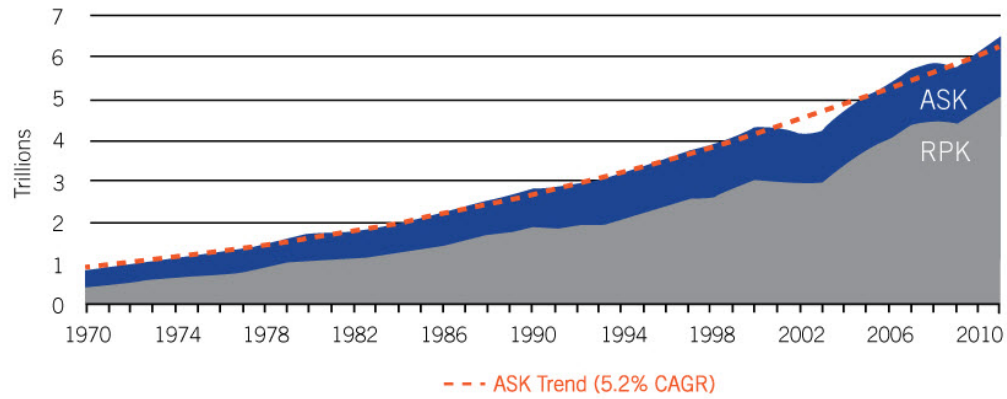

Figure 5: Annual ASK and RPK Growth Trends, 1970 to 2010[58]

A fourth critical factor in examining whether or not the global aviation industry is experiencing overcapacity is the size of the global commercial aircraft fleet. As Figure 7 shows, from 1980 to 2012, the in-service, Western-built commercial jet fleet grew from 5,600 units to nearly 19,900 units, with net fleet growth averaging 4 percent per year. In fact, in virtually every year since 1980, the year-over-year net fleet growth has always been within +/- 50 percent of that 4 percent average annual growth (i.e., between 3 percent and 5 percent average annual fleet growth).[59] The only significant outliers occurred as a result of significant systemic shocks in 2002 after the September 11 (9/11) terror attacks, and in 2008-2009 in the wake of the Great Recession—times when year-over-year fleet growth rates briefly dipped into negative territory (largely as a result of an increase in parked aircraft in response to suddenly constrained demand). In short, with 30 years of data indicating average annual fleet growth of approximately 4 percent, and 40 years of data showing available seat kilometers growing at 5.2 percent, a picture emerges of an industry growing at a balanced pace and with an appropriate level of capacity to respond to demand. Put simply, air travel has proven to be both remarkably consistent and resilient, with the industry recovering quickly from the Great Recession and "returning to its long-term growth rate of approximately 5 percent per year."[60]

With 30 years of data indicating average annual fleet growth of approximately 4 percent and 40 years of data showing ASKs growing at 5.2 percent, a picture emerges of an industry growing at a balanced pace and with an appropriate level of capacity to respond to demand.

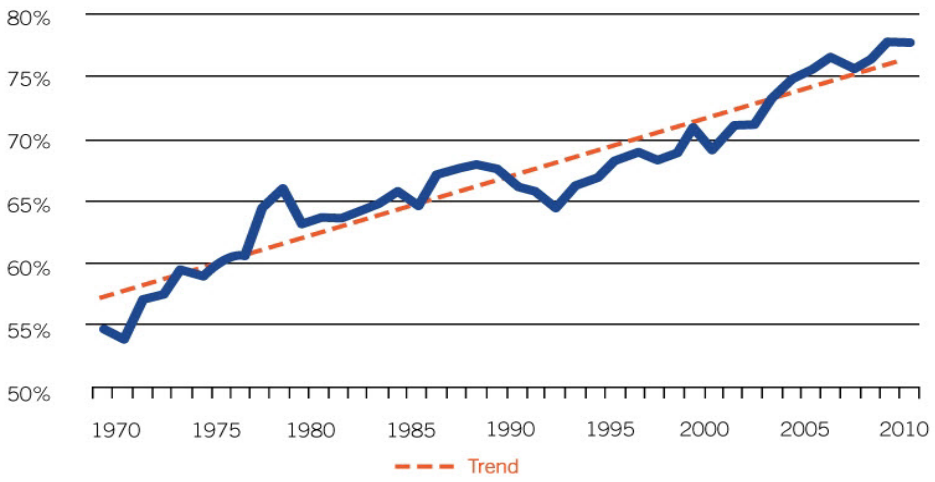

Figure 6: Global Passenger Load Factors, 1970-2012[61]

Boeing anticipates that over the two decades from 2012 to 2032, revenue passenger kilometers will increase by 5 percent annually, again in-line with historical growth trends.[62] Going forward to 2032, Boeing anticipates that this growth in demand for air travel will produce "a global need for 35,280 new airplanes, 41 percent of which will replace older airplanes and 59 percent of which will expand the global fleet."[63] That will bring the total number of airplanes in service from 20,310 in 2013 to 41,240 in 2032, a 3.6 percent annual increase in the global airplane fleet over the next two decades. Extrapolating this data back to 1980, the global commercial jet fleet will have grown from 5,600 to 41,240—or at an average annual growth rate of 3.9 percent over a 50-year period—again a remarkably consistent picture of stable sustained capacity growth over an extended period of time.

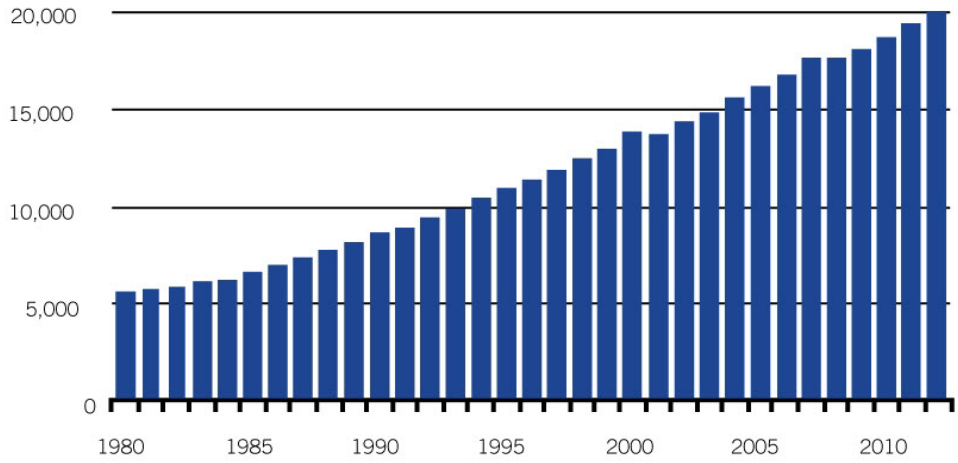

Figure 7: In-service Western-built commercial jet fleet[64]

Extrapolating data back to 1980, the global commercial jet fleet will have grown from 5,600 to 41,240—or at an average annual growth rate of 3.9 percent over a 50-year period—a remarkably consistent picture of stable sustained capacity growth over an extended period of time.

It's worth noting that Airbus expects similar growth in the global aviation industry over the coming two decades. In fact, Airbus estimates that between 2012 and 2032 the global market for air travel measured in RPKs will double, as world annual traffic growth increases by an average of 4.7 percent annually.[65] And in an estimate not too dissimilar from Boeing's, Airbus predicts that new deliveries of passenger jet aircraft (with greater than 100 seats) and freight aircraft (greater than 10 tonnes) through 2032 will tally almost 30,000 aircraft, bringing the world fleet in service to 36,556 aircraft by 2032.[66]

Responding to Overcapacity Claims

In their paper *Does the Airline Industry Suffer from Overcapacity?*, Eric Amel, Daniel M. Kasper, and Darin Lee purport to demonstrate that the global aviation industry suffers from overcapacity.[67] The mechanisms the authors attempt to use to demonstrate this include an overview of supply and demand, unsubstantiated claims that the airline industry continuously posts negative profits, and a regression analysis with a dummy variable for 2008 to 2012 that represents an "increase in ECA financing" which supposedly shows that export credit agencies, including the Ex-Im Bank, induce overcapacity.

However, to convincingly prove that the Ex-Im Bank creates structural overcapacity in the global aviation industry, proponents must successfully make a number of arguments. First, they must successfully demonstrate that overcapacity exists. Second, they must demonstrate that this overcapacity constitutes a chronic condition that has been perpetuated across multiple market cycles. Third, they must demonstrate that overcapacity and subsequent low profits are maintained artificially by non-market forces. Fourth and finally, they must establish that the non-market force takes the form of access to export credit agency financing of capital investments. While it is readily apparent that brief periods of overcapacity occur in the airline industry following demand shocks, our analysis sees little evidence that the market is not at equilibrium. We further see neither conclusive evidence for the existence of pervasive and distorting non-market forces, nor credible arguments for how export financing could drive up the supply of aircraft out of concert with existing global demand.

Amel et al. fail to convincingly demonstrate a divergence between the number of passengers and the number of planes in the air, or to show a consistent loss of industry profits outside of the two major market shocks the airline industry experienced over the past 15 years. Moreover, never in their report do the authors make a convincing argument for why export financing creates market-distorting demand. Nor do the authors make any distinction or case for the causality of export financing increasing aviation industry capacity.

The reality is that the volume of export financing is determined by the number of foreign entities seeking to purchase Airbus or Boeing aircraft, not by export credit agencies themselves—just like how customers, not sellers, determine how much any vendor sells. But the authors do not seem to recognize that without a strong argument for how the availability of export financing could create or induce—not merely enable—foreign demand, net financing guarantee statistics are a measure of fleet expansion and not of distortions created by ECAs such as the Ex-Im Bank.

But before presenting their analysis of whether export credit financing contributes to aviation industry overcapacity, the authors attempt to build the argument that the global aviation industry suffers from overcapacity by positing several tests indicating an industry's overcapacity, including: 1) profitability over a business cycle (i.e., whether the industry has failed to earn profits over a business cycle); 2) the industry's return on invested capital (ROIC) vs. weighted average cost of capital (WACC) (i.e., whether industry returns are covering the costs of invested capital); 3) an inability to adjust supply (i.e., airlines suffer from chronic overcapacity because they cannot adjust supply); 4) frequency of bankruptcies and reorganizations; 5) Capacity utilization (i.e., whether the capacity utilized in producing the industry's output was meaningfully less than available productive capital); and 6) rapidly growing global fleet size.[68] The following section examines each of these claims in turn.

Airline Industry Profitability

The authors argue that "overcapacity exists when prices are insufficient for an industry to cover its costs, including the cost of capital, over a business cycle. That is, an industry suffering from overcapacity will generate negative economic profits as long as the overcapacity persists."[69] The authors further assert that "chronic sub-par returns are perhaps the most reliable indicator of an industry with excess capacity."[70] And they point out that when measured against an accounting profitability measure, "the airline industry has been unprofitable for six out of the last eleven years (2002-2012) and has lost a cumulative $14.1 billion over that period."[71] In short, they claim that systemic overabundance of supply has engendered the negative airline profits the industry has endured over the past eleven years.

Yet "chronic sub-par returns" in the airline industry can be explained by any number of other factors beyond overcapacity. Chronic sub-par returns could equally be the result of inferior or ineffectual business models, poor management strategies, or simply high cost structures. For instance, in the United States, adjusted for average flight distance, legacy carrier costs have remained 30 percent to 60 percent higher than those of low-cost carriers (LCCs) for nearly all of the deregulation era, averaging about 40 percent higher over the

last decade.[72] Clearly those disparate cost structures will have an impact on economic returns. Rapidly rising costs in the aviation industry, notably labor and fuel costs, can also have a significant impact. In fact, fuel costs have surpassed labor as the largest segment of airline operating cost, with fuel costs nearly doubling over the past 10 years.[73] And whereas fuel costs accounted for just 13 percent of an airlines' total costs in 2002, they account for over one-third today.[74] The high taxes and fees paid by airlines could also be a factor in explaining sub-par returns, as the global aviation industry is also one of the most highly taxed, and particularly highly taxed relative to other transport modes.[75] Indeed, many argue that the tax and fee burden on airline tickets today is excessive, including a 7.5 percent ticket tax, fees of $6.20 per segment flown, and landing rights fees.[76]

Yet in a 2011 paper examining the U.S. airline industries' losses in the 2000s, Severin Borenstein finds that "fuel costs shocks played a role only in the last few years [of the 2000s]" and that "demand shocks are a more plausible explanation for the losses of the 2000s." As Borenstein writes, "the post-9/11 demand drop, which was about 20 percent from 2000 to 2002, was unprecedented. By 2008, demand was still about 3 percent lower than it had been in 2000, and then it dropped about 11 percent in 2009."[77] As he concludes, "the main drivers [of the industries' losses in the 2000s] were the severe demand downturn after 9/11 and the large cost differential between legacy airlines and the low-cost carriers."[78] In other words, demand shocks, not persistent oversupply, were the primary culprit behind the airline industry's sub-par economic performance in the 2000s.

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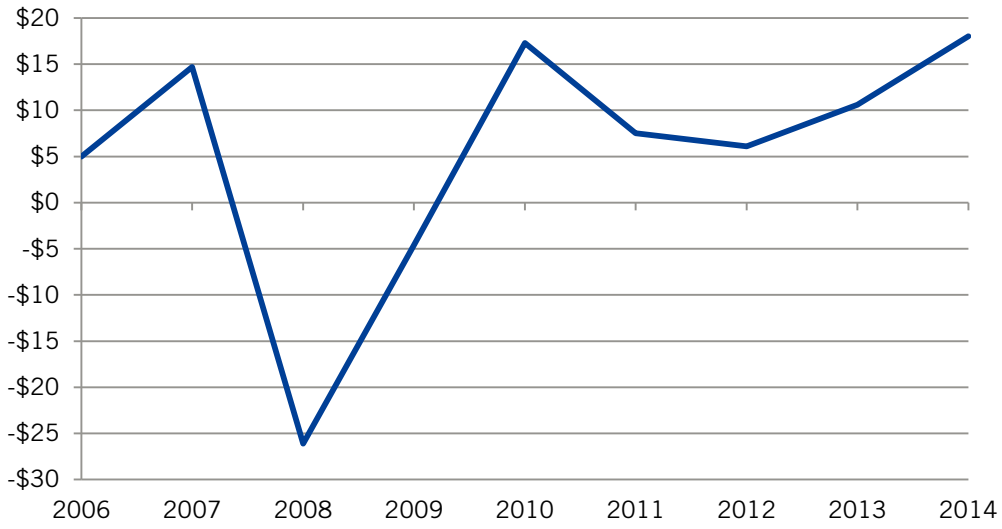

Figure 8: Global Aviation Industry Profits, $ billions, 2006-2014[79]

Thus, Amel et al. do not convincingly establish that the global aviation industry suffers from chronically sub-par returns. Of the 11-year period the authors examined, four years saw net losses immediately following the 9/11 terrorist attacks and two years recorded net losses due to the 2008 Great Recession. In each case, depressed profits were caused by shocks to industry demand, not by oversupply. Of course, the demand shock created by the 2008 recession did create a brief period of over-supply. However, the market quickly adjusted by decreasing flights and parking some aircraft during the period. For example, the number of flights shrank by 3 percent between 2007 and 2009. Once the worst of the

recession passed, aircraft went back to full utilization and the airline industry recovered. Moreover, examining the period from 2006 to 2014—despite rising fuel prices and the global recession—the world's airlines are expected to earn a net profit of $48.5 billion, with a net return on capital of 4.2 percent, as Figure 8 shows. These are hardly the figures of an industry suffering from chronically sub-par returns.

BOX 1: IMPACT OF INCREASES IN DEMAND ON AIRLINE PROFITABILITY

Technology continues to advance the global aviation industry by helping to cut prices and increase demand. Over the past 15 years, air travel has become significantly less expensive as a result of technology and improved efficiency. In fact, in the United States, prices have declined by an average of 1.4 percent annually since 2000.[80] (And since the 1980s, domestic U.S. airfares (including fees) have declined by 40 percent.)[81] This trend may be even more significant in other parts of the world, where carriers can reap greater benefits from adopting technology and best practices and utilizing economies of scale. The decline in prices has occurred despite rising fuel costs and increased airport security costs following the 9/11 terrorist attacks. As noted, in 2003, fuel costs represented just 14 percent of airline expenditures, compared to over 30 percent in 2013. If fuel prices had held constant, air fares would have decreased by 29 percent over the ensuing 13-year period.[82]

Of course, a decrease in the price of flights could represent an attempt to attract passengers on to under-capacity flights, not increased efficiency by airlines that allows savings to be passed on to consumers. Indeed, this was assuredly the case in 2009, when costs dipped well below 2013 levels and passenger revenues shrank by 16 percent. However, passenger revenues almost doubled in the 10 years from 2004 to 2013, increasing by 94 percent thanks to dramatic increases in demand, as Figure 9 shows.[83]

Clearly, reductions in price can create dramatic increases in demand. The International Air Travel Association (IATA) estimates that, on the national level, elasticity of demand is approximately 0.8, meaning that a 1 percent reduction in price will yield a 0.8 percent increase in sales. Elasticity is slightly lower for international flights (0.6), but higher for route-level air travel (1.4).[84]

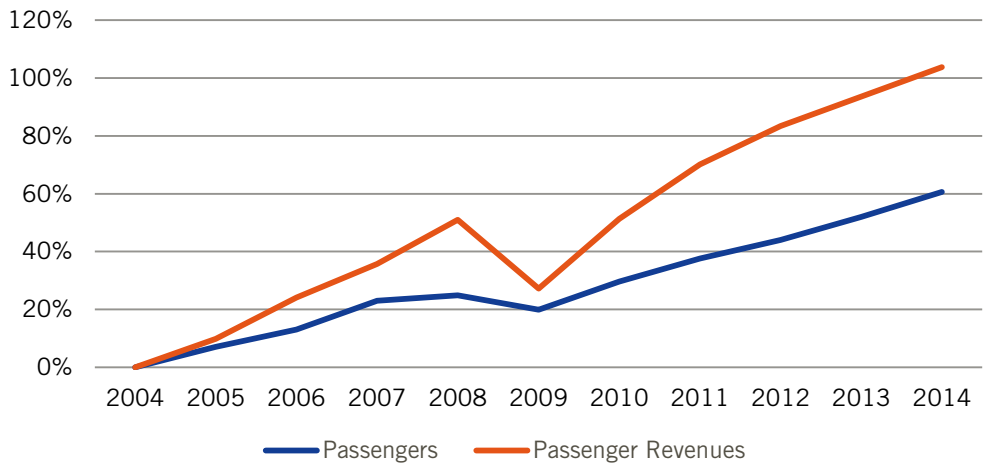

Figure 9: Percentage Growth in Commercial Passengers and Passenger Revenue since 2004[85]

Assessing ROIC vs. WACC

The authors further claim that another indicator of chronic overcapacity in the aviation industry is that its return on invested capital (ROIC) has not matched its weighted average cost of capital (WACC). In other words, they lament that the industry is not producing sufficient profits. For example, they cite a Boston Consulting Group analysis finding that "the ROIC for U.S. airlines was lower than for other major industries," such as software and services or pharmaceuticals and biotechnology.[86] But it's not fair to compare airlines to high-tech, high-margin industries such as Google. These industries simply have different cost structures. The reality is that industries such as airlines, which have inherently high fixed costs and heavy competition, will have lower profits than other industries. Firms in such industries often invest to gain market share, not necessarily to maximize profits in the short term. This may make the industry less profitable than others, but it's not necessarily an indicator of chronic overcapacity.

Aviation Industry's Ability to Adjust Capacity to Supply

Another reason the authors argue that the aviation industry suffers from overcapacity is that airlines are unable to adjust supply. The paper claims matter-of-factly that pressures in the airline industry create an excess supply of aircraft, and that pressures peculiar to the industry prohibit natural market adjustments in supply by airlines. In particular, the authors lament that the industry is subject to a Prisoner's Dilemma, in which firms must play a "wait-and-see" game to ascertain if competitors will cut capacity. As they argue, "the airline industry is also characterized by incentives that discourage carriers from decreasing their capacity by the full amount needed for the industry to return to profitability during periods of overcapacity."[87]

Claims that barriers to exit have locked the airline industry into a consistent state of overcapacity and revenue loss for the past 20 years—especially during a period when fleet capacity, consumer demand, and passenger load factors have increased consistently—are unrealistic in theory and unsubstantiated in fact.

When analyzing the intricate logic of the strategic considerations that Amel et al. describe as a Prisoner's Dilemma, it should be noted that: 1) practically all industries face similar pressures; 2) an attempt to arrive at a "winning" strategy of airlines coordinating cuts to capacity would functionally make the industry a cartel; 3) the outcome they describe is unstable, and firms do in fact have incentives to pull back capacity when they are losing money; and 4) no real-world evidence supports the claim that the airline industry is stuck in a destructive, profit-losing disequilibrium characterized by an overabundance of supply.

The reality is that the airline industry is in a constant state of adjustment with regard to total fleet size, routes served, aircraft utilization times, etc. It is true that it takes some time for airlines to expand or shrink their fleets, add new destinations, or create new point-to-point connections. However, these decisions are all intensely strategic, long-term in scope, and take into account potential market fluctuations to optimize future potential profits. While the mechanisms Amel et al. describe undoubtedly slow this process to some degree (as similar restraints slow adjustments in supply in almost all industries), they lack the power to preclude adjustments in supply over periods longer than several quarters. Claims that barriers to exit have locked the airline industry into a consistent state of overcapacity and revenue loss for the past 20 years—especially during a period when fleet capacity, consumer demand, and passenger load factors have increased consistently—are unrealistic in theory and unsubstantiated in fact. Moreover, an analysis by Oliver Wojahn of the IATA examining airline industry overcapacity actually demonstrates that a window of two

years is sufficient for companies to adjust capacity in reaction to changing industry competition and shocks to demand.[88] Similarly, Wojahn finds a two-year lag time between profitability and capital expenditure, suggesting that a two-year planning horizon exists for firms adjusting fleet sizes to strategically adjust to changing demand.

Frequency of Bankruptcies and Reorganizations

The authors argue that the numerous bankruptcies and reorganizations the global aviation industry has experienced historically and through today is another indicator of chronic overcapacity. For example, they note that "Lufthansa is engaged in a major restructuring in the hopes of reducing its annual costs by close to $2 billion over the next two years."[89] But this is exactly what one would expect any organization to be doing when needed: restructuring its operations to ensure profitability. Firms such as GE, IBM, and Microsoft reorganize their operations all the time, but that doesn't mean they are in industries constantly marked by a state of overcapacity. To be sure, capacity is a consideration in airline industry mergers and consolidation, but, if anything, the recent consolidations in the U.S. aviation industry have drawn capacity out of the system, not contributed to overcapacity.

Appropriate Capacity Utilization

The authors argue that, for the airline industry, the appropriate metric of capacity utilization is how intensively airlines are using their aircraft (i.e., average fleet-wide block hour utilization).[90] Here, they argue that the global aviation industry is using its assets at significantly less than the available productive capacity. Specifically, they argue that "the average daily block hour utilization for the industry's widebody fleet began to decline in 2007 and remained 7 percent below its 2006 peak in 2011. The fact that today's average daily widebody utilization remains nearly one hour below its potential is evidence of excess widebody capacity."[91]

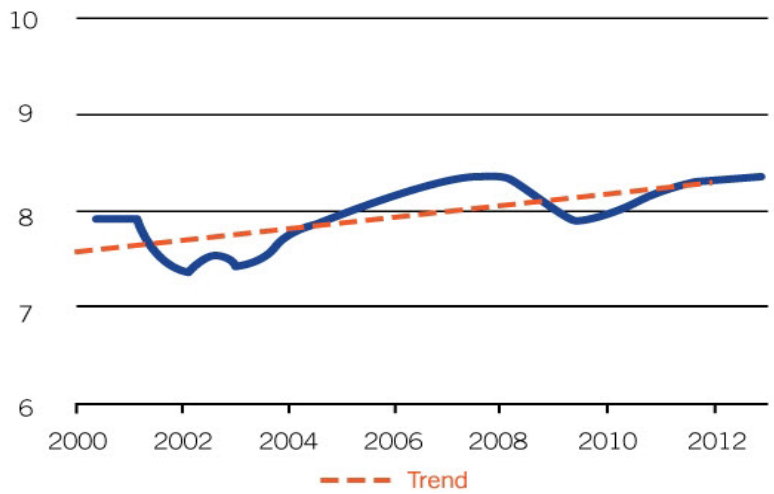

Figure 10: Average Flight Hours per Day (single-aisle passenger planes)[92]

But other evidence suggests that aircraft utilization has actually increased, not decreased, over the past decade. As Figure 10 illustrates, single-aisle passenger aircraft utilization,

measured in average flight hours per day, actually increased over the past decade, from just under 8 hours to about 8.5 hours. It's also worth noting that the fluctuations in average flight hours per day (notably the dip after 2008) indicate airlines' constant efforts to match capacity supply with constantly changing demand.[93] As Figure 11 shows, a similar pattern holds true for wide-body passenger airplanes as well. In fact, from 2000 to 2012, their utilization increased by approximately 5 minutes on average each year, as their utilization increased from less than, to over, 11 hours per day over the course of the decade.[94]

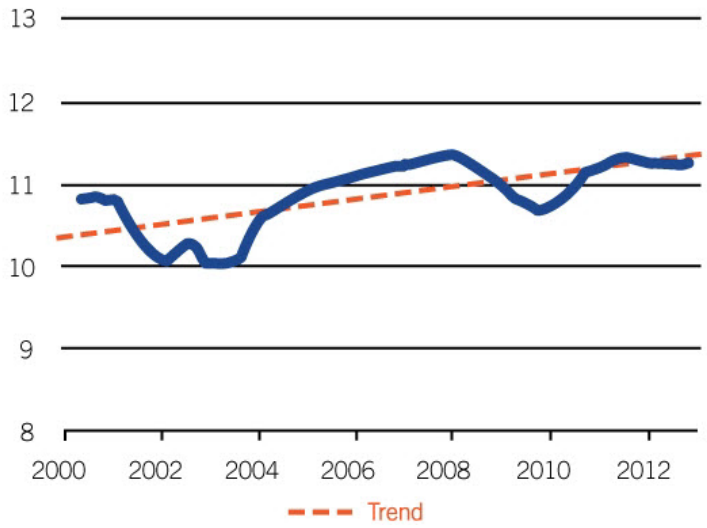

Figure 11: Average Flight Hours per Day (wide-body passenger planes)[95]

Consistent Global Capacity Growth

Finally, the authors posit that another sign of overcapacity is that the global aircraft fleet has increased dramatically and excessively over the past decade and is slated to rapidly expand even further over the next several years. As noted, this is misleading. First, Amel et al. only provide statistics on wide-body aircraft, which represent less than 18 percent of new aircraft, net of retirements, added to the global fleet between 2002 and 2012. While the paper presents growth data on these aircraft, they do not mention total fleet increases, which averaged 4 percent annual growth between 1980 and 2012 and are projected by Boeing at a 3.7 percent annual growth average from 2012 to 2032.[96]

In short, Amel et al. argue that the robust aircraft orders of recent years are another signal of overcapacity. Indeed, 2012 and 2013 were strong years for the aircraft manufacturing industry. In fact, in 2013, total large commercial jet aircraft orders increased 46 percent from 2012, with annual orders now exceeding pre-crisis financial levels. Boeing's 2013 orders were the second highest annual sales tally registered in the company's history, marking a 13 percent increase from the previous year's order total. In 2013, Airbus orders increased 94 percent over 2012 levels, and even surpassed Airbus's total orders from 2011 when it launched its new A320 aircraft.[97] Airbus's sales chief was even quoted in April 2013 as saying, "I could sell many more if I had the production slots."[98] But while some have argued that this robust growth and the fact that the industry currently has a backlog

of over 10,000 aircraft orders is a sign of overcapacity, the reality is that this still keeps the fleet growth rate in-line with historical norms and long-term averages.

The paper further implies that Middle Eastern and Asian airlines are expanding rapidly because of unfair assistance provided by ECAs around the world, including the Ex-Im Bank. However, a much simpler explanation exists. Middle Eastern and Asian airline companies are growing quickly because Middle Eastern and Asian demand for air travel is growing faster than anywhere else in the world. It's anticipated that over the next 20 years, nearly half the world's air traffic growth will be driven by travel to, from, or within the Asia-Pacific region.[99] Indeed, the emerging Asian middle class, which is estimated to grow by 2.5 billion by 2030, is now purchasing airline tickets in rising numbers. Outbound Chinese tourists are expected to double by 2020.[100] In other words, a significant share of the demand for air travel and thus aircraft will stem from the Asia-Pacific and Middle-Eastern regions over the next two decades. That's why Boeing estimates that 12,820 of the 35,280 estimated new aircraft deliveries through 2032, or 37 percent, will be bound for Asian markets, tripling the total number of aircraft in the Asia-Pacific fleet from 5,090 airplanes in 2012 to 14,750 airplanes in 2032.[101] Airbus likewise estimates that the Asian-Pacific market will account for 37 percent of new aircraft deliveries through 2032.[102] Meanwhile, growth of the aircraft fleet in the Middle East is expected to increase 4.7 percent annually through 2032 as passenger traffic increases by 6.3 percent annually.

The Middle East and Asia, quite simply, are where the new airline customers are. These countries are rapidly demanding more available seat kilometers, and middle class travel has opened up market space for new LCC entrants. To meet demand, Asian carriers have purchased Airbus and Boeing planes. And in part because financing options in these countries are lacking, these airlines are purchasing and leasing with the help of ECAs.

Export Credit Financing Does Not Contribute to Industry Overcapacity

Amel et al. offer a regression analysis seeking to identify and quantify the factors causing the overcapacity that they claim exists in the global aviation industry. The regression "test[s] the relation between global airline capacity (measured by the natural logarithm of available seat miles [ASMs]) and a series of independent variables that are commonly understood to influence capacity."[103] The regression presented starts with the assumption that the airline industry is operating at chronic overcapacity and then seeks to demonstrate that the overcapacity is caused by financing by export credit agencies including the Ex-Im Bank. The authors claim that, "Our statistical analysis of global capacity data supports the conclusion that ECA financing has contributed to airline industry overcapacity."[104] However, even if we concede to Amel et al. the dubious argument regarding the existence of overcapacity, the regression analysis presented fails to make any sort of convincing causal argument related to ECAs fueling overcapacity.

The regression seeks to demonstrate that higher levels of ECA financing causes increased global capacity. To isolate a causal effect, independent variables in the regression control for log of global GDP, log of global gas prices, and dummy variables for the years following the 9/11 terrorist attacks. To measure ECA involvement, a dummy variable for 2008 to 2012 is used to approximate ECA involvement. Here, the authors find significance at the

10 percent level for the 2008 to 2012 ECA dummy variable, which is the only evidence the authors use to assert that ECAs are the cause of increased capacity.

But there are several severe problems with this approach. First, the methodology employed is too simplistic and lacks explanatory power. Reducing ECA financing to a dummy variable covering the last five years of the study limits the ability to conclusively attribute a positive relationship between ECA activity and expanding capacity. Unfortunately, the regression does not include annual data regarding ECA funding, or even give an indication of the severity of the increase in ECA funding. With no year-to-year variation, it's impossible to distinguish the ECA spending trend from any other trend, technology, or market shock that occurred between these dates. In short, the dummy variable Amel et al. use is woefully incapable of establishing any sort of relationship between ECA spending and capacity, let alone a causal one.

The dummy variable Amel et al. use is incapable of establishing any sort of relationship between ECA spending and capacity, let alone a causal one.

The regression also omits other important variables. For one, after heavily emphasizing time delays in adjusting capacity, the study should have used lagged variables to express the time required to make adjustments. Financing a plane in 2008 would not lead to increased seat-miles until the order could be filled, a period that frequently requires between 1.5 to 5 years. ECA financing in 2008 should correlate with seat-miles in 2010 or 2011 at the earliest. Second, the regression uses no residual year variable to capture changes in the industry over time, an omission which implicitly makes the assumption that the airline industry is unchanged from 1977 to 2012. And because the data used ended in 2012, the authors are unable to provide a counterfactual for how airplane sales reacted to the conclusion of the ECA time period. Plus, if financing from an ECA really did only start to kick in in 2008, what supports Amel at al.'s hypothesis that the market has been operating at steady, consistent overcapacity since the early 1990s?

More importantly, the analysis fails to address or account for the central endogeneity problem between ECA financing and global aircraft sales. Endogeneity occurs when an independent variable (ECA financing) and a dependent variable (available seat miles) are both correlated with a third, omitted variable. This results in a correlation between the independent and dependent variables that implies no causal relationship. In this case, ECA financing and ASMs are both caused by increases in demand. Higher demand by firms both expands the amount of applications for ECA financing and increases global capacity once that demand is filled by increased investment. ECAs cannot incentivize carriers to purchase airplanes; they can only provide the means by which carriers can make investments to satisfy existing demand. If global demand for aircraft sales increases, especially in countries with limited financing options and where trade agreements deem ECA assistance admissible, then there will be more deals for ECAs to finance. Thus, global demand is responsible for both the rise in ECA financing and increased capacity.

While there are ways to correct for this problem and test the hypothesis that ECAs create demand, such a test would require a rigorous methodology analyzing decisions by individual firms based on how much financing they receive. All in all, Amel et al.'s findings have very limited implications. Strictly speaking, all that the coefficient for the ECA dummy variable conveys is that the global airline industry as a whole increased total

capacity at a faster rate—a rate which would occur at random less than 10 percent of the time—from 2008 to 2012 than over the rest of the period studied, controlling for fuel costs and global GDP growth.

However, the authors conclude that "the estimated coefficient on *D(Increased ECA Financing)* is positive and significant and suggests that increased ECA financing starting in 2008 is associated with approximately 4.1 percent more ASMs than would have been predicted based on GDP and fuel prices alone."[105] Not only does the methodology used show that this claim is woefully unsubstantiated, so too do industry statistics. For one, in 2008 and 2009, supposedly years in which ECAs drove supply rapidly upwards, capacity growth shrank by a net of 1.5 percent.[106] In addition, from 2010 to 2012, when oversupply should have hypothetically kept profits low, the industry had its best three-year run of the millennium and earned a total of $30.9 billion dollars.[107] Thus, what Amel et al. have really discovered is that capacity showed signs of adjusting back upwards as the industry accelerated out of a period of severely diminished demand.

Finally, Amel et al.'s paper offers no airline-by-airline analysis of how export financing gave individual airlines any sort of advantage over competitors, but erroneously assumes that the availability of funding supersedes natural increases in demand in these locations. The paper also gives no analysis of increased regional demand as a cause of increased capacity spending or an indication of how fleet sizes grow in relation to regional GDP. In conclusion, the authors' efforts to establish chronic structural overcapacity in the global aviation industry fail to convince.

Box 2: Wojahn's Analysis of Aviation Industry Overcapacity

A study performed by Oliver Wojahn for the International Air Transport Association analyzes, on a firm-by-firm basis, which airlines are heavily investing in expanding their fleets and network capacity. Wojahn's regression analysis shows that profitability is indeed a major factor of heavy investment in the airline industry.108 While the regression lacks the power to determine whether investment levels outstrip or match demand, it does show that carriers are investing for the proper reasons. Factors that correlate to current demand (Asian markets and LCCs) and lagged profitability measures are significant determinants of investment, showing that market forces are dictating increases in supply.

Airline profits—which Wojahn defines as the difference between return on capital expenditure and the weighted average cost of capital—directly impact the levels of capital expenditures with which airlines can invest to grow their fleet. Significant results were found for profitability, both measured over the lifetime of a carrier and on a two-year lag, demonstrating that a window of two years is adequate for companies to adjust capacity in reaction to changing industry competition and shocks in demand.

The regression further shows that growing demand is a major contributor to airline investment. Customers worldwide are shifting preferences toward low-cost carriers. In addition, rapid growth in demand for air travel in Southeast Asia has accelerated growth in these areas. Both Asian-region and low-cost carriers invest more on capital expenditures, with significance at the 1 percent level.

On the other hand, established firms have grown less rapidly, with negative relationships between size and investment. This can be interpreted as a loss of innovation advantage by large firms as new, smaller carriers with streamlined business models are making improvements, increasing efficiency, and capturing market share. The paper does identify a potential source of overcapacity in the industry as being that legacy carriers have been slow to adjust and react to the innovative business models of more efficient, fast-growing entrants, which is consistent with empirical results.

Wojahn's regression also came to the important conclusion that state ownership share had no impact on capital expenditure. This implies that strategic decisions by state actors are not a factor in the growth of fleet size. Instead, expansion is dictated by previous success, both historically and with a two-year lag, and by reaction to consumer demand growth in expanding geographies and price levels. This rebuts the Amel et al. hypothesis that "in addition to ECA financing subsidies, many carriers receive government assistance and some are, in fact, state owned. While there is some debate as to the extent that government-owned airlines are subsidized, there is no question that, at minimum, backing an airline with the faith and credit of the government allows a carrier to obtain debt financing at a lower rate than it would have obtained without the benefit of explicit and/or implicit government guarantees."[109] While this may or may not be true, Wojahn demonstrates empirically that it has no effect on firms' decisions to expand.

Still, Wojahn's regression analysis tells us little about whether overcapacity is a real problem in the industry. For instance, no analysis is performed regarding the expansion of demand, so it's impossible to tell from this analysis whether a rise in Asian capacity indeed surpasses growth in demand. However, paired with evidence of growth rates in fleet size and total capacity increasing in-line with growth of consumer demand and increased passenger load factors, it can be presumed that capacity is not overabundant.

Wojahn's analysis demonstrates that a window of two years is sufficient for companies to adjust capacity in reaction to changing industry competition and shocks to demand.

THE IMPACT OF EX-IM FINANCING ON THE GLOBAL AIRCRAFT INDUSTRY

Not only do some opponents of the Ex-Im Bank make the claim that airlines suffer from chronic overcapacity, they further assert that the driving non-market force behind imbalances in supply and demand in the global aviation industry is financing from ECAs such as the Ex-Im Bank. However:

1. No firm would ever make decisions of whether to acquire an aircraft based solely on the interest rate provided; and

2. The potential magnitude of any distortionary effect caused by ECA lending is miniscule.

An airline's (or lessor's) decision to purchase or lease an aircraft is a major strategic decision. The cost of commercial aircraft easily runs over a hundred million dollars. Once acquired, revenue generated from each purchased plane must cover millions in depreciation, maintenance, and operational costs. While financing considerations are certainly a component of an aircraft purchase decision, they are not the key driver. In fact, pricing differences between ECAs and other options are so narrow that most eligible purchasers select alternative financing options. For example, for Boeing and Airbus, 48

percent and 56 percent of their deliveries in FY 2013, respectively, were eligible for but did not receive ECA financing.[110]

Identifying reliable, unbiased sources for estimating the difference in financing costs for purchasers using Ex-Im Bank funding as opposed to financing through other means is a difficult proposition. However, estimates that have been produced find almost no difference in cost between ECA and regular financing costs. In fact, an estimate from the D.C. District court ruling in the case *Delta Air Lines, Inc. v. Export-Import Bank of the United States* found the total costs of Ex-Im financing to be within 0.2 percent of the total costs of alternative financing options.[111] Compared to other costs associated with aircraft operation, depreciation, and maintenance (which can easily total over $50 million per aircraft per year), this difference is completely incapable of either giving a carrier a quantified advantage in a market or in incentivizing carriers to purchase additional aircraft.

Export credit agencies respond to existing demand for aircraft, their activities do not create additional demand that would engender overcapacity in the global aviation industry.

Functionally, the only way that ECA financing could create an aircraft sale—that is, a scenario in which the airline would not have acquired the aircraft had an ECA not offered funding—is if no other funding options were previously available. In this case, the demand from foreign carriers already exists and market forces dictate that investing in an aircraft is commercially viable. Here, ECAs cannot be considered distortionary, since they enable demand, not create it.[112] Purchases based off of scant savings from financing options would occur only in the rarest, most marginal of cases.

In a duopoly, such as that which exists between Airbus and Boeing, price elasticity on sales is high because even a marginal reduction in cost can attract customers away from the competition. ECAs have incentives to marginally lower interest rates to try to win business for their company away from the other producer. However, financing costs remain tied to market rates. As Standard & Poor's (S&P) explains, "because the rates the ECAs charge to guarantee loans are set by international agreement, we don't expect to see much change in financing costs—even with less competition between the ECAs."[113]

Even if financing costs were driven down by ECA competition, this should not be conflated with creating global demand for aircraft. Aircraft do not have clear substitutes, are large investments, and are productive capital investments. All of these factors lower the elasticity of demand for global aircraft. If prices for aircraft rose, carriers would still demand roughly the same number of planes. Thus, while it is competitively imperative for ECAs to provide financing options for consumers of their national product, ECA financing is not intended to and does not raise total global demand.

Finally, when considering distortions, it's also important to consider the potential magnitude of the distortion's impact. Here, it's important to understand the marginal role that ECAs play in the global financing of aircraft. While they do guarantee billions in loans each year, ECAs represent a fairly minor portion of total financing, even among markets eligible for ECA assistance. For instance, in FY 2013, both Boeing and Airbus had 15 percent of their respective deliveries (approximately 100 aircraft each) supported by export credit agencies.[114] This level of impact clearly demonstrates that any claims of ECA financing giving foreign carriers unfair advantages or distorting markets are grossly inflated.

Moreover, U.S. carriers only infrequently compete directly against recipients of ECA financing. As S&P explains, "The large U.S. airlines compete on international routes mostly against large European and Asian airlines that have received little or no Ex-Im-supported financing."[115] International cabotage agreements prohibit airlines from flying routes between two foreign countries, or between two points inside a foreign country. As a result, U.S. airlines can only compete on direct flights to a recipient country, which represent only a small fraction of the routes typically flown by U.S. airlines.

In conclusion, while constant fluctuations in supply and demand make the global passenger airline market subject to temporary and brief periods of overcapacity (and undercapacity)—just as constantly adjusting supply and demand would impact any marketplace—the global aviation industry does not suffer from long-term chronic structural oversupply. Moreover, Export-Import Bank credit assistance to foreign purchasers of aircraft does not contribute in any substantial way to aviation industry overcapacity. Further, global markets for aircraft are not similar to America's mortgage finance and housing markets that experienced significant overcapacity in the mid- to late-2000s, contributing to the onset of the Great Recession. The profitability challenges experienced by the global aviation industry in the 2000s were primarily the result of two significant shocks to demand (the 9/11 terrorist attacks in 2001 and the Great Recession in 2008), not the result of long-term chronic structural overcapacity, and the four most recent years show a return to airline profitability. Most significantly with regard to the aviation industry overcapacity issue is that, over the past half century, the growth in capacity of the global aviation industry—as reflected primarily through the growth in available seat kilometers and the size of the global aircraft fleet—has risen in accordance with growth in demand for air travel, at a sustained approximately 5 percent level (in terms of both RPKs and ASKs).

BOX 3: COMPARING THE EX-IM BANK TO GOVERNMENT-SPONSORED MORTGAGE SECURITIZERS

The Ex-Im Bank is chartered as a "government corporation" (i.e., a government agency established by Congress as a corporation) whose lending is backed by the full faith and credit of the U.S. government. Some argue that this makes the Ex-Im Bank similar to the Government National Mortgage Association (Ginnie Mae), a fellow government corporation, or to the Federal National Mortgage Association (Fannie Mae) and Federal Home Loan Mortgage Corporation (Freddie Mac), government-sponsored entities (GSEs) that also enjoy the full faith and credit of the U.S. government.[116] They argue that this government backing constituted a non-market factor that led Ginnie Mae, Fannie Mae, and Freddie Mac to back issuance of (i.e., securitize) more mortgage finance than would otherwise have been the case in the early- to mid-2000s, contributing to overcapacity in the U.S. mortgage finance market, which contributed in part to inflation in national housing market prices causing the bubble that ultimately burst with the Great Recession. In a like manner, they argue that a similar mechanism exists regarding the Ex-Im Bank's provision of export credit finance for some airlines' purchases of aircraft: that Ex-Im financing allows them to purchase aircraft at below-market rates, which contributes to overcapacity in the global passenger airline industry to the detriment of U.S. airlines. But this analogy is stretched on any number of dimensions, including with regard to overstating the role of government-backed mortgage finance in contributing to the Great Recession, and with regard to comparing houses (immobile and illiquid) to aircraft (mobile and redeployable) as assets.

First, there exists any number of far more compelling reasons explaining the overcapacity of mortgage finance in the 2000s than that the government's backing of Ginnie Mae, Fannie Mae, and Freddie Mac enabled them to back excessive amounts of mortgage finance. Much more culpable were many more banks' entrances into the mortgage bond market, government policies aimed at expanding homeownership (including political pressure on those entities to revise their historical lending practices to enable more home ownership), speculative purchasing by home owners, and outright predatory practices by mortgage lenders. Here, sub-prime mortgage lending practices using so-called "No-doc" (No-documentation) or "NINJA" (no verification of income, job status, or assets) terms in particular permitted loans to be made to individuals who by any historical standards should never have been receiving them. Indeed, the U.S. Financial Crisis Inquiry Commission concluded that the crisis was the result of many causes, including: "widespread failures in financial regulation, including the Federal Reserve's failure to stem the tide of toxic mortgages; dramatic breakdowns in corporate governance including too many financial firms acting recklessly and taking on too much risk; an explosive mix of excessive borrowing and risk by households and Wall Street that put the financial system on a collision course with crisis; and systemic breaches in accountability and ethics at all levels."[117]

In fact, academic research has found that a significant part of the problem was that lending standards in the United States deteriorated significantly from 2004 to 2007, in large part because the share of mortgages being issued by government-sponsored lenders (which specialized in conventional, conforming, non-subprime mortgages) shrank, while the share issued by private securitizers grew. As Michael Simkovic writes in *Competition and Crisis in Mortgage Securitization*, "Although standards declined across the market, the largest and most powerful of the mortgage securitizers, the Government Sponsored Enterprises, remained more successful than other mortgage securitizers at maintaining prudent underwriting."[118] In other words, the problem wasn't that government-sponsored mortgage securitizers were enabling too many mortgages, it's that they weren't issuing a large enough share of them. In a like manner, the Ex-Im Bank has maintained prudent lending standards (as reflected by a default rate of less than one-quarter of 1 percent) while lending substantially at market rates.

Another way the analogy comparing the would-be effect of Ex-Im Bank credit support for aircraft purchases to GSE-based securitization for home mortgages breaks down is that houses are an immobile, fairly illiquid asset, tied to a fixed location, whereas "flexibility of asset deployment is an important characteristic of commercial airplanes and one reason they are often viewed as desirable investments in the financial sector."[119] Indeed, as the *Cape Town Convention on International Interests in Mobile Equipment* notes, aircraft are highly mobile, desirable, recoverable, and re-assignable assets.[120] Airplanes often move from one airline to another during their lifetime. This is reflected in robust leasing markets that reflect the long life expectancy of commercial aircraft. Indeed, as the report *Key Findings on Airplane Economic Life* finds, the duration of "airplane economic life has remained stable over the last two decades."[121] In other words, aircraft don't lend themselves to the type of oversupply experienced in housing markets.

In addition, while housing investments are expected to retain or appreciate in value (and thus risky loans made under this assumption quickly turned sour once the market reversed), aircraft purchasers know that their investments will depreciate by millions, plus require millions in maintenance and operating costs in fuel and personnel each year. It would be folly for any airline to make an investment of this magnitude and stake out such a large risk simply because they enjoyed attractive financing options. While a financing bonanza created demand and drew consumers to the U.S. housing market, airlines' decisions are far more strategic and long term. In other words, the fact that

individuals could attain no-interest loans influenced many home purchasers speculating that housing values would continue to rise, but airlines don't decide to purchase aircraft just because they might be able to get fractionally lower terms on aircraft financing; rather, they've made a decision to invest in securing an aircraft (whether purchasing or leasing it) because it fills an operational objective the airline hopes to profitably serve.

CONCLUSION

The robustness of manufacturing exports is a vital part of the U.S. economy and a key component of American competitiveness. Export credit finance is a vital tool for boosting U.S. exports, boosting U.S. job growth, narrowing the U.S. trade deficit, and revitalizing the U.S. economy. With the Ex-Im Bank's current authorization set to expire on September 30, 2014, Congress should move expeditiously to reauthorize this important agency. Moreover, Congress should increase the Ex-Im Bank's current exposure limit of $140 billion to at least $160 billion by 2018, ensuring that American exporters don't fall behind foreign competitors. Reauthorization of the Ex-Im Bank is critical to the ability of many U.S. exporters to compete on a level playing field in commercial markets where current and future competitors continue to enjoy aggressive support from their countries' export credit agencies. At the same time, it's essential that the unsubstantiated claims decrying the Ex-Im Bank be swiftly rebuked. Arguments motivated by political ideology and special interests claiming that Export-Import Bank financing distorts markets are erroneous and threaten to constrain American manufacturing and services firms' ability to export to global markets. Failure to reauthorize the Ex-Im Bank while expanding its lending cap will have only one result—fewer U.S. exports and fewer U.S. jobs.

Despite the arguments of some who have tried to link overcapacity in housing markets to overcapacity in the global aviation industry, the reality is aircraft simply don't lend themselves to the type of oversupply experienced in mortgage and housing markets.

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