Peterson Institute for International Economics

CHINA'S ECONOMIC TRANSFORMATION

LESSONS, IMPACT, AND THE PATH FORWARD

CONTENTS

INTRODUCTION

China is undergoing a welcome if rocky transition from an economy driven by investment and exports to one in which private consumption and services are the major factor in economic expansion. Several roadblocks stand in the way of achieving this objective, however. Among them are a potentially slowing economy stemming from rising debt levels, a languishing real estate market, and decelerating productivity growth. Chinese leaders have endorsed bold reform measures to reduce the many barriers to progress, but many powerful special interests oppose such changes. The increased volatility and uncertainty surrounding China's economy and its financial markets have complicated the challenges facing China's leadership.

To make progress on these and other issues, China would be well advised to conclude new agreements on trade and investment with the United States and other economic partners and to further open up its capital account and develop its financial markets. As the recent turmoil in global markets suggests, the problems facing China affect the global economy in ways that are more far-reaching than ever. This collection of essays by scholars at the Peterson Institute for International Economics (PIIE) is part of a series of interactions and discussions with the China Finance 40 (CF40) Forum, which began in 2012. The papers are intended to illuminate the challenges facing China as it engages increasingly with the global economy and builds on its phenomenal economic success of the past three decades.

This PIIE Briefing begins with an essay by Jeffrey J. Schott and Sean Miner arguing that increasing trade and investment with the United States can spur domestic economic reforms, and that it is also in China's interest to pursue more multilateral and plurilateral trade pacts. Jacob Kirkegaard looks at fiscal policy in China, the United States, and Europe, and concludes that China should increase transparency in local government fiscal budgeting practices. Tomáš Hellebrandt and Paolo Mauro show how China has been one of the biggest drivers of reducing global income inequality in the recent past, but that its future role in improving overall global welfare looks likely to decline. They call for further investment in infrastructure by China and also discuss the challenges for China in dealing with environment degradation and climate change. Robert Z. Lawrence argues that trade with China, rather than making Americans poorer, as public opinion seems to think, actually raises American living standards. Finally, Silvia Merler and Nicolas Véron examine the challenges of achieving financial reform in both China and the European Union. They argue that China could use the European Union's highly developed financial system as a point of reference to guide the financial system away from reliance on banks and toward a more market-based system.

US-CHINA TRADE RELATIONS: PROJECTING THE PATH FORWARD

JEFFREY J. SCHOTT AND SEAN MINER

Twenty years ago, trade and investment relations between China and the United States were primitive. But spurred by Chinese leaders' political commitments to economic reform, China began a rapid and dynamic process of integration into regional and global markets.

The major turning point was China's accession to the World Trade Organization (WTO) in late 2001. The WTO accession, negotiated in large measure with the United States, was seen as a complement to the domestic reforms that Zhu Rongji wanted to pursue to propel economic growth. While some Chinese complained about the high entry cost into the WTO, in hindsight the WTO deal was far-sighted and unlocked substantial benefits for the Chinese economy. In 2001, China accounted for 5 percent of world merchandise trade; in 2014, China was the world's largest trading nation, with total exports and imports of $4.3 trillion representing 14 percent of world trade.[1]

An important component of the trade story has been the growth of US-China trade (see table 1). Bilateral merchandise trade increased almost ten-fold from $63 billion in 1996 to $591 billion in 2014. Much of the growth was in Chinese shipments to the United States. As a result, the US trade deficit with China soared from almost $40 billion to $343 billion over this period. This large and unbalanced relationship has been subject to harsh commentary and scrutiny in the US public debate. Charges of unfair Chinese trade practices and currency manipulation continue to resound in the halls of Congress and fill dozens of pages of the annual US Trade Representative report on foreign barriers to US trade.

The decade leading up to the Global Financial Crisis of 2008–09 recorded large Chinese trade surpluses with the United States and the rest of world—at one time in 2008, China's current account surplus exceeded 10 percent of its GDP, and PIIE economists amongst others estimated that the renminbi was undervalued by more than 20 percent (Cline and Williamson 2009). Such imbalances provoked numerous trade complaints against Chinese policies and Chinese exports to the United States. The Global Financial Crisis brought this era of export-led growth to a crashing halt. Chinese shipments to the United States fell about 12 percent in 2009 compared with 2008; in contrast, US exports to China basically matched the prior year performance due in part to the massive economic stimulus Chinese officials injected into their economy to support and reorient domestic growth. Indeed, since 2009, US exports to China have increased by almost 80 percent (albeit from a low base)—close to the target growth that President Barack Obama sought for total US exports under his Na-

---

JEFFREY SCHOTT is senior fellow at the Peterson Institute for International Economics. SEAN MINER is China Program manager and research associate at the Peterson Institute for International Economics.

1. Data exclude intra-European Union trade. World Trade Organization, International Trade Statistics, 2014.

tional Export Initiative (NEI). During the same period, US imports from China also recovered markedly and increased by 58 percent from $296 billion in 2009 to $467 billion in 2014 (see table 1).

Can bilateral US-China trade continue to grow strongly in the years ahead? Many observers argue caution based on lingering and still potent suspicion of the other side. President Obama's talking points for trade legislation echo these concerns when he argues that China will write the new trading rules if US efforts to secure the Trans-Pacific Partnership (TPP) fall flat. Such charges, directed primarily at a narrow domestic audience and translated by some Chinese officials as the rebirth of containment policy, sound like China bashing.[2]

Yet despite lingering mistrust in Beijing and Washington of each other, each side has recognized that they need to work together to propel common international objectives and to complement domestic economic priorities. The successful bilateral talks between Presidents Xi Jinping and Barack Obama at the Asia-Pacific Economic Cooperation (APEC) Summit in Beijing in November 2014 produced important agreements to advance international negotiations on climate change and on trade in information technology products. Building on that momentum, bilateral trade and investment talks continue to advance. The Obama-Xi summit in Washington in September 2015 could be pivotal in that regard.

This paper summarizes key areas where US-China talks could yield a bountiful harvest of economic reforms and new precedents to inspire broader regional and multilateral trade pacts. We start with a very short description of the key challenges to deepening bilateral economic ties in the near to medium term. We then examine how ongoing negotiations, including the bilateral investment treaty (BIT), could promote closer cooperation and spur domestic economic policy reforms. We also examine US-China interests in working together on the TPP and/or pursuing a Free Trade Area of the Asia-Pacific (FTAAP) as well as plurilateral trade pacts on services, environmental goods, information technology products, and possibly other issues.

Table 1	Bilateral US-China trade, 1996–2014 (millions of US dollars)		
Year	US imports from China	US exports to China	Trade balance
1996	51,513	11,993	–39,520
1997	62,558	12,862	–49,696
1998	71,169	14,241	–56,927
1999	81,788	13,111	–68,677
2000	100,018	16,185	–83,833
2001	102,278	19,182	–83,096
2002	125,193	22,128	–103,065
2003	152,436	28,368	–124,068
2004	196,682	34,428	–162,254
2005	243,470	41,192	–202,278
2006	287,774	53,673	–234,101
2007	321,443	62,937	–258,506
2008	337,773	69,733	–268,040
2009	296,374	69,497	–226,877
2010	364,953	91,911	–273,042
2011	399,371	104,122	–295,250
2012	425,626	110,516	–315,111
2013	440,448	121,736	–318,711
2014	466,656	124,024	–342,633

Source: US Census Bureau.

CHALLENGES TO US-CHINA TRADE RELATIONS

To deepen economic relations between the two countries, the United States and China need to resolve or mitigate key problems that inhibit trade and investment. Priority US concerns involve discrimination applied via nontariff barriers on goods and services, restrictions on foreign direct investment (FDI), misappropriation of intellectual property, subsidies to farmers and state-owned enterprises (SOEs), restrictive government procurement policies, and the application of China's antimonopoly law, among others. On the Chinese side, the main concerns involve restrictions on US high-tech exports, the frequent application of antidumping and countervailing duties, and national security standards applied by the Committee on Foreign Investment in the United States (CFIUS) in its review of proposed Chinese investments in the United States.

---

2. So, too, did US opposition to the China-led Asian Infrastructure Investment Bank, though US criticism has been substantially muted in recent months.

Table 2	OECD's 2014 Services Trade Restrictiveness Index	
Sector	United States	China
Accounting	15	41
Architecture	16	26
Engineering	20	29
Legal	14	52
Motion pictures	6	45
Broadcasting	30	78
Sound recording	5	31
Telecom	12	53
Air transport	58	59
Maritime transport	38	39
Rail freight transport	12	42
Road freight transport	14	38
Courier	37	87
Distribution	7	36
Commercial banking	13	49
Insurance	22	50
Construction	16	29
Computer	15	29

Note: Higher numbers indicate services trade is more restrictive.

Source: Organization for Economic Cooperation and Development, www.oecd.org.

While Chinese tariffs are among the lowest maintained by developing countries, Chinese nontariff barriers for goods and services pose significant hurdles for foreign suppliers. The Global Trade Analysis Project (GTAP) tried to quantify the impact of barriers like extra licenses, product and certification requirements, complex regulatory environment, or product quotas. GTAP calculated that ad valorem equivalents (AVEs) for Chinese nontariff barriers averaged 17 percent for merchandise goods; in contrast, the United States' AVE average was 4 percent.

Similarly, the Services Trade Restrictiveness Index, developed in a comprehensive study compiled by the Organization for Economic Cooperation and Development (OECD), shows that China has significantly higher restrictions on many service imports compared with the United States (see table 2); this was also the case for most other observed countries. This is significant because the United States has a competitive advantage in most services and could offset a substantial amount of its bilateral merchandise deficit with increased service exports to China. Removing barriers to trade and investment in services is also critical to the success of the Chinese economy, since the benefits would redound to all users of services in China, including manufacturers and farmers. That is why China has asked to join the plurilateral negotiations on a Trade in Services Agreement—see below.

Despite China's current investment reforms, foreign investors still regard the investment environment as very challenging and continue to report that laws and regulations that favor domestic companies hinder their business. Indigenous innovation laws state that local governments and SOEs purchase only from domestic suppliers of goods and services. Performance requirements place conditions on investment, requiring, for example, purchases of inputs from local producers. Similarly, the actions of China's antimonopoly authorities appear inconsistent and merit further scrutiny. These types of regulations and actions inhibit economic integration rather that foster it.

One of the major challenges for the BIT negotiations and US-China relations more broadly is how to ensure that SOEs do not have unfair advantage due to preferences and subsidies from national and local governments. SOEs are responsible for more than half of China's outbound FDI, although the share of private firms is increasing. Officials want to ensure that SOEs don't collude when making bids on foreign projects, or that they don't provide favorable prices on goods or services to Chinese firms. There are over 100,000 SOEs in China, and although some may be shifting toward a mixed ownership model, most of the control still lies with local and central government authorities in China. SOEs rarely appear to be subject to investigations by the antimonopoly authorities. They also have "delegated authorities" including control over some ports and electricity, which could provide opportunities for them to favor domestic firms over foreign. The best way to allay fears of improper conduct would be to insert provisions into the BIT that SOEs will act in accordance with commercial considerations, meaning without government preferences and subsidies and consistent with the normal practices of privately held enterprises in the relevant business or industry. In this regard, provisions requiring more transparency relating to disclosure of subsidies and reporting of financial accounts would be helpful.

Another high-profile concern involves the lack of or inadequate enforcement of intellectual property rights (IPRs) in China. US firms reportedly lose as much as $100 billion annually to copyright, patent, and trademark violations in China.[3] The legal framework around IPR is strong but the implementation of the law has been inadequate. Similarly, competition policy has a strong regulatory framework, on par with Western standards, but application of the law has caused concerns. Areas like merger reviews have seemingly unfairly targeted foreign firms. Moreover, unusual conditions may be placed on the merger; for example, when Walmart purchased Niu Hai Holding, China's Ministry of Commerce stated that the merger would be approved if the merged firm would refrain from operating an e-commerce business in China. Additionally, China's National Development and Reform Commission has seemingly targeted foreign firms in pricing probes even when there was no evidence of cartel behavior.

China's grievances often lie with antidumping duties imposed on their products. When it joined the WTO, China agreed that special conditions could apply to the determination of possible dumping by Chinese exporters because of China's "nonmarket economy" (NME) status. These specific provisions expire in 2016 at which point China should be accorded market economy status with respect to the calculation of antidumping duties. Chinese officials are concerned that US practice might not immediately align with the WTO obligations and would like to see a change in US antidumping law that eliminates the NME discrimination. Given the recent contentious congressional debate over reauthorization of Trade Promotion Authority (TPA), such reforms to the US law seem very problematic.

The United States' national security review of foreign purchases of US enterprises has caused the perception in China that many Chinese investments are not welcome. The view is that CFIUS treats Chinese firms unfairly and is biased against them. China would like to see greater transparency in CFIUS reviews, so they can better understand the criteria for successfully passing an investigation. But currently the prospect of going through a review may be enough for Chinese investors to change their minds. The United States should outline some clear and transparent tests for foreign investors to better comprehend the system. In fact, the vast majority of Chinese investors who face a CFIUS review are unconditionally cleared (Hufbauer, Miner, and Moran 2015).

The current restrictions on US manufactured dual-use goods exports to China also cause a ripple in the relationship. Many of the high-tech items on the US export control list are not restricted by other developed countries like Germany, France, and the United Kingdom. Those countries already export these products to China, which are generally available in many markets. Such restrictions on dual-use items are nettlesome and can raise costs for Chinese companies, but more often than not they do not serve their intended strategic purpose in preventing the diffusion of new military technologies.

None of these problems is easy to resolve but few pose intractable challenges to moving forward with trade and investment agreements involving both countries. The following section examines ongoing and prospective talks that are addressing or could address many of the trade barriers and discriminatory policies that impede the growth of US-China trade and investment in goods and services.

NEGOTIATING OPTIONS GOING FORWARD

Current and future negotiations could substantially deepen economic opportunities for China and the United States in each other's markets. In this section we examine key options for both countries to advance bilateral relations and regional economic integration.

Over the past decade, both the United States and China have sharply expanded bilateral trade and concluded trade agreements with many common trading partners. They share common objectives in promoting

---

3. See Commission on Theft of American Intellectual Property (2013).

the work of APEC, particularly the development of the FTAAP, and in reinvigorating trade negotiations in the WTO, building on their successful efforts to conclude the Trade Facilitation Agreement and the expanded Information Technology Agreement (ITA2). Both are engaged in plurilateral trade talks as well as broad-ranging but separate mega-regional free trade agreements (FTAs).[4] And they are pursuing intensive negotiations on a BIT.

To date, China has pursued trade agreements that are considerably less ambitious than those concluded by the United States. Chinese officials used these agreements to gain experience in negotiations and to slowly open up different sectors, while keeping other sectors protected. China's accession to the WTO was a major step forward in trade liberalization, agreeing to bind tariffs at much lower rates than other developing countries on a host of merchandise goods. Recent FTAs with Australia and Korea are much more comprehensive than earlier Chinese pacts but still allow extensive exceptions from trade reforms.

To conclude a deal with the United States on trade and investment, China will have to substantially narrow the gap between the high standards required by US pacts and the more modest requirements set out in the recent agreements that China has concluded. Compared with five years ago, the "ambition gap" has closed quite a bit, but not enough to consider Chinese participation in the TPP or a US-China trade and investment deal without additional Chinese economic reforms. However, the fact that China is implementing, albeit incrementally, new market-oriented policies in services and considering new disciplines on SOEs among other reforms, opens the door to potentially important new initiatives over the medium term.

Looking ahead at prospective areas of US-China economic cooperation, we first examine the talks that are under way—the BIT and plurilaterals on information technology, services, and environmental goods. We then turn to potential comprehensive trade pacts in the Asia-Pacific region in which both countries could participate.

Bilateral Investment Treaty

The only ongoing bilateral negotiation between China and the United States is the US-China Bilateral Investment Treaty. These talks have proceeded in fits and starts since their launch in 2008; the aim is to facilitate two-way FDI and strengthen investor protection in the Chinese market. China also has begun to invest more heavily in the US market. As of yearend 2013, the stock of US FDI in China is around $60 billion, while China's FDI in the United States is valued at about $48 billion.[5]

The United States has implemented only two BITs over the past decade, with Uruguay and Rwanda. The US Model BIT may be partly to blame: It sets ambitious standards for US partner countries. The slim harvest of BITs also reflects the arduous task in securing Congressional ratification of completed negotiations. As a treaty, the BIT would need to secure a two-thirds vote of the Senate, unlike FTAs, which require a majority in both the House and the Senate. As a consequence, many countries have opted to pursue FTAs with strong investment chapters in lieu of separate BITs with the United States.

In contrast, China has pursued many more BITs than the United States, though the pacts are less comprehensive in scope. China has recently completed investment treaties with Canada and Uzbekistan and a trilateral agreement with Japan and Korea. China also has a BIT with all individual EU countries except Ireland and may engage in BIT negotiations with the European Union to consolidate and update investment rules across the European continent.

The investment agreement between China and Canada is China's most progressive, with a broad definition of investment, including IPRs. There are also provisions to ensure the free flow of capital by Canadian investors

---

4. China is part of the Regional Comprehensive Economic Partnership (RCEP), which involves the 10 members of ASEAN and six of its FTA partners: China, Korea, Japan, India, Australia, and New Zealand. Almost half of those countries also participate in TPP negotiations with the United States. For a brief comparison of the two initiatives, see Schott (2014).
5. China's Ministry of Commerce, Rhodium Group's China Investment Monitor.

into and out of China, subject to a balance of payments exception. However, the China-Canada pact does not include preestablishment national treatment. Additionally, there are carveouts in investor-state dispute settlement that are inconsistent with the US Model BIT. Both issues are potential deal-breakers for the US side.

The negotiations for a US-China BIT made a significant leap forward in July 2013, when China offered to schedule commitments to investment reforms on the basis of a negative list, i.e., the list of industries and/or activities in which US firms will continue to face discrimination of various forms. In essence, the negative list demarks the exceptions to the general rule of national and most-favored nation treatment for foreign investors investing in China. China tabled its initial offer on the negative list just before the Strategic and Economic Dialogue in June 2015. One close observer of the BIT called the negative list "too long," a strong indication that the BIT negotiations are far from coming to a conclusion.[6]

Two negotiating sessions have been scheduled between July and the US-China summit meeting in September amid hopes that the negative list could be refined so that the two presidents could extol the progress being made in the BIT negotiations. Even with significant progress, however, the BIT will require a lot more hard work. If so, negotiators could then accelerate efforts to refine the negative list so that it is acceptable to both sides. Details must be worked out thoroughly and with care to ensure that the BIT attracts the two-thirds majority vote in the US Senate needed to ratify the treaty.

The key to success in the BIT negotiations will be the extent to which China can build on the very tentative steps taken since 2013 to liberalize FDI in the Shanghai Pilot Free Trade Zone (SFTZ). The SFTZ was the first time that China experimented with a negative list, though the reality was that there were few new open sectors for foreign investors in the zone. China has somewhat pared down this list since the SFTZ opening, but it is still perceived to be rather restrictive. China has also recently announced three new free trade zones and their respective negative lists. China's plan is to experiment with opening up new sectors in the new FTZs, and then to incorporate a new negative list into the new foreign investment law.

In this regard, progress in the BIT negotiations depends importantly on the review and reform of China's foreign investment law, which is drawn up by the Ministry of Commerce. The last revision was enacted by the National People's Congress (NPC) in 2011. The law was written based on a positive list, meaning only the sectors that are approved for investment are listed. The United States regards the foreign investment law as overly burdensome with heavy regulation and often inconsistent application of laws and regulations. Moreover, compared with other market-based economies, too few industries are open to foreign investors without restrictive requirements.

China released a draft of a new foreign investment law in January 2015; it is being revised and recalibrated in light of the ongoing experience with China's special economic zones. The new foreign investment law ultimately must be approved by the State Council and then enacted into law by the NPC—this could possibly happen during the next NPC session in March 2018.

What does that mean for the BIT negotiations? In one scenario, the BIT coverage of the negative list could guide the domestic determination of sectors open to FDI under China's revised foreign investment law. More likely, in our view, China will proceed deliberately and incrementally to refine the negative list in the period leading up to the NPC. Along with the likely distraction of the US elections in 2016, the BIT negotiations would then advance but only in measured fashion over the coming year or so. In either case, concluding the talks before President Obama has left office, as sometimes mentioned in public commentary, looks increasingly unlikely.

---

6. Chris Johnson from CSIS speaking on CSIS podcast "CogitAsia," June 19, 2015.

Bilateral and Regional Free Trade Initiatives

The most direct path for further integration between China and the United States would be a bilateral free trade deal. In a comprehensive study of a potential bilateral agreement, Bergsten, Hufbauer, and Miner (2014) concluded that a US-China FTA could yield large gains for each country in terms of increased trade and output, if each could commit to cuts in border barriers and the removal of discrimination in key areas of domestic economic policy. Annual exports would increase by nearly $500 billion in China and nearly $400 billion in the United States, while national income could grow by 1.9 percent in China and 0.7 percent in the United States. Note these are very large numbers. From a purely economic perspective, such a deal makes a lot of sense for both countries. But political obstacles make near-term progress on bilateral trade talks problematic. The US Congress is unlikely to sanction such talks at this point in time, but progress in the BIT negotiations and in other areas under discussion in APEC could help deflect over the medium term concerns about unfair Chinese trade practices.

There are several other pathways for China and the United States to deepen economic relations over the medium term. Both countries are members of the APEC and are working together to prepare the ground for an FTAAP among all or most of APEC's 21 member countries. The FTAAP would be the practical manifestation of the APEC vision to achieve free trade and investment in the region by 2020, which was put forward in the Bogor Declaration of APEC leaders in November 1994. To that end, China made launching an APEC study on an FTAAP one of its priority objectives during 2014, when it chaired APEC. The study was commissioned by APEC leaders in November 2014 and is expected to be presented to them at the 2016 gathering.

Working together on a regional trade initiative may be easier than a bilateral FTA. In a regional deal, many other countries can buffer the political frictions that may be hard to manage in a bilateral negotiation. Witness the longstanding opposition to an FTA between Japan and the United States, which now is in prospect as part of the broader TPP. But regional initiatives are not on a fast track. The FTAAP study will need to be vetted in APEC before member countries can decide on the framework and agenda of a potential Asia-Pacific negotiation. In any event, work on an FTAAP may not begin before the end of this decade and concluding a pact may be a decade away.

Whether the driving force for an FTAAP will be the expansion of TPP to more countries, or some agglomeration of various integration arrangements in force or in preparation in the Asia-Pacific region, or whether the FTAAP evolves in a separate negotiation, will depend importantly on how the United States and China agree to go forward. Which countries participate will influence to a significant degree the feasibility and desirability of each of these options. Existing membership restrictions in APEC and in the mega-regional FTAs will need to be reviewed and revised. The TPP, for example, is supposedly limited to APEC members, while the RCEP is limited to FTA partners of ASEAN members. These membership restrictions could and should be changed to foster a policy of "open regionalism" and ensure that the megaregional FTAs do not inadvertently cause fissures in existing integration arrangements of participating countries.

Plurilateral Building Blocks

Whether comprehensive trade and investment pacts go forward quickly, US-China trade relations can follow a step-by-step approach to free trade via participation in sectoral plurilateral agreements covering specific products or services and involving a subset of WTO member countries. These agreements would augment existing WTO obligations and could match or exceed commitments to trade reform under negotiation in the TPP. Thus, they have the potential to sharply close the gap between the United States and China in several important areas that should be part of a modern FTA.

By far the most important plurilateral agreement under negotiation is the Trade in Services Agreement (TiSA). The United States and China are both engaged in three other plurilaterals—the Information Technology Agreement 2 (ITA2), the Government Procurement Agreement (GPA), and the Environmental Goods Agreement (EGA)—that also would provide significant momentum to both bilateral and multilateral trade negotiations. We briefly discuss each in turn.

The ITA2 involves 80 countries committed to reducing or eliminating tariffs on a wide range of advanced information technology products. The first ITA went into force in 1997; this new agreement seeks to expand product coverage with the goal of including 97 percent of global IT products. The talks had been stalled for several years because the United States and other participants refused to continue negotiations until China tabled a more substantive offer. The stalemate was broken in an agreement between the United States and China concluded on the sidelines of the APEC Summit in Beijing in November 2014 in which China committed to significantly expanding the range of IT products for which it would liberalize trade barriers. Hopes for an early conclusion of the overall ITA2 by yearend 2014 were dashed, however, when China, Korea, and Taiwan could not agree on the treatment or exclusion of important tariff lines related to organic light-emitting diode (OLED) technologies and other products. In July 2015, however, US and European concessions broke the impasse; with those added benefits, and a few new exceptions to ITA liberalization, Korea and China settled their difference and agreed to let the ITA2 move forward.[7]

The GPA has proved to be a very difficult agreement for many countries to join, including China. Government procurement constitutes a large share of economic activity for most countries, yet tenders for most contracts generally are open only to domestic firms. Removing restrictions on government procurement would allow governments to spend their resources more efficiently and would lessen the risk of corruption in bidding on government contracts. China agreed to join the GPA, according to its 2001 WTO accession documents, "as soon as possible."[8] China has been negotiating its accession to the GPA for many years; its most recent offer, while expanding the scope of provinces subject to the international disciplines, still has not satisfied the other members of the GPA, so negotiations continue.

The EGA aims to eliminate tariffs on a range of goods that help mitigate pollution and other adverse environmental impacts. The initiative, launched in 2014, now includes the United States, China, the European Union, and 14 other countries. EGA negotiators are currently assembling the list of products that would be covered by tariff reforms and then will negotiate the length of time in which the tariffs would be phased out as well as possible limited exceptions from liberalization commitments. The EGA could be a potentially huge deal, since the aim in a second stage of the talks is to expand reforms beyond tariff liberalization and address reductions in nontariff barriers as well as services related to protecting the environment. World trade in environmental goods is estimated to be around $1 trillion; China and the United States account for a significant amount of this trade.

If agreements can be concluded in both the ITA2 and the EGA, significant benefits would accrue to both the United States and China. In that regard, these sectoral free trade pacts would be important building blocks toward broader bilateral free trade.

Finally, and most importantly, are the TiSA negotiations. The aim of these talks is to reduce barriers that inhibit trade and investment in services. The United States and European Union are leading the TiSA negotiations. China asked to join the agreement in 2014; the European Union supported the request but the United States balked. At first, US officials argued that China might impede ongoing services negotiations like it did for some time in the ITA2 talks. In fact, US officials wanted upfront commitments to services reform, given the sparse liberalization undertaken by China in the General Agreement on Trade in Services in the WTO. As

---

7. *Inside US Trade*, July 18, 2015.
8. China's 2001 WTO Accession documents, www.wto.org.

a consequence, US officials did not remove their block on Chinese participation in the TiSA even after US and Chinese officials announced a breakthrough in the ITA2 negotiations in November 2014.

In our view, the US position is counterproductive to US interests. Chinese objectives in the TiSA are markedly different than those in the ITA talks. In ITA, its domestic firms are divided between supporters of liberalization, especially those that import high-tech components for their increasingly sophisticated manufactures, and industrial producers, who want to maintain existing import barriers. In TiSA, the underlying motivation of Chinese officials is to complement and reinforce domestic reforms being implemented incrementally since the Third Party Plenum in November 2013. In other words, China has a vested interest in the success of the TiSA negotiations. If the United States opened the door for Chinese participation, it would put pressure on other major developing countries to follow suit, especially India and Brazil. If these core members of the BRICs bloc joined TiSA, the deal could then easily be extended to the entire WTO membership and substantially upgrade WTO commitments to liberalization of trade and investment in services. Given the strong competitiveness of many US service companies, successful conclusion of services trade pacts would open substantial new growth opportunities for US exports to China and the broader Asia-Pacific region.

CONCLUSIONS

Domestic economic reforms are having a positive and constructive impact on Chinese trade policy. More emphasis is being placed on reducing restrictions on trade and investment in services, providing incentives for investments that moderate pollution and other environmental degradation, and imposing disciplines on subsidies and procurement practices of state-owned enterprises. These reforms are progressing slowly and incrementally; none meet the standards that US officials would expect in a comprehensive trade and investment pact like the TPP. But the policy reforms are narrowing the gap between Chinese practice and international best practice.

Ongoing bilateral consultations and negotiations are creating a more constructive US-China relationship in which both countries can advance bilateral and regional economic integration and hopefully establish new foundations for broader multilateral trade agreements. Current negotiations on a BIT are particularly important; they are progressing but require a lot more work. As officials often caution, it is better to take time and get the deal right than tailor results to a fixed timetable. If the disciplines are too weak, it may be difficult to attract the requisite political support needed to ratify the pact. The new plurilateral talks on trade in services are also critical to economic growth in both countries and complementary to the BIT in terms of promoting closer trade relations. The United States should lift its hold on Chinese participation and use the TiSA negotiations to reinforce and complement ongoing Chinese services reforms.

In sum, prospects for closer US-China trade relations are becoming more positive. Of course, there will be bumps on the road; the BIT talks may disappoint in the short run and require additional effort. Trade talks may proceed slower and yield more modest results than hoped. But working together, the United States and China can build a better bilateral relationship and contribute to trade agreements that promote sustainable economic development.

REFERENCES

Bergsten, C. Fred, Gary Clyde Hufbauer, and Sean Miner. 2014. *Bridging the Pacific: Toward Free Trade and Investment Between China and the United States*. Washington: Peterson Institute for International Economics.

Cline, William R., and John Williamson. 2009. *2009 Estimates of Fundamental Equilibrium Exchange Rates*. PIIE Policy Brief 09-10 (June). Washington: Peterson Institute for International Economics.

Commission on Theft of American Intellectual Property. 2013. *The IP Commission Report*. Washington: National Bureau of Asian Research.

Hufbauer, Gary Clyde, Sean Miner, and Theodore Moran. 2015. Committee on Foreign Investment in the United States and the US-China Bilateral Investment Treaty: Challenges in Meeting China's Demands. In *Toward a US-China Investment Treaty*. PIIE Briefing 15-1. Washington: Peterson Institute for International Economics.

Schott, Jeffrey J. 2014. Asia-Pacific Economic Integration: Projecting the Path Forward. In *New Directions in Asia-Pacific Economic Integration*, ed. Guoqiang Tang and Peter A. Petri. Honolulu: East-West Center.

CONTINENT-SIZE FISCAL UNIONS: LESSONS FOR CHINA FROM THE UNITED STATES AND THE EURO AREA

JACOB FUNK KIRKEGAARD

Sure there are dishonest men in local government. But there are dishonest men in national government too.

—Richard M. Nixon

The great American political scientist Harold Lasswell (1936) once defined politics as nothing more than an essentially redistributive process concerned with "who gets what, when and how?" Viewed in this light, it is easy to see how the basic organization and distribution of government tasks and revenue sources between the central, regional, and local government levels is among the most contentious and existentially important issue to get right in any polity, irrespective of size or political system.

Continent-size economies like China, the United States, and the euro area face particular challenges in creating fiscal unions in which revenues and tasks are allocated across levels of government in an appropriate way. Without such a system—and the popular perception that the system is fair—economic prosperity will be difficult to achieve.

No universally applicable template governs relations between central and lower-level governments. Differences in governmental design—rooted in historical, geographical, and demographic idiosyncrasies—are evident across economies at the same level of development. A distribution of tasks and revenues at a particular point in time may not necessarily be appropriate at a later stage.

In late 2013 the Chinese government initiated a set of potentially wide-ranging reform of intragovernmental fiscal relations, the first overhaul since 1994, when China's economy was less than one-sixth its current size.[1] This paper investigates whether fiscal and government relations between the center and lower levels of government in the advanced continent-size economies in the United States and the euro area offer any insights for China's leaders.[2]

The paper is organized as follows. The first section describes fiscal and intragovernmental revenue and the allocation of tasks in China in recent decades. The second section discusses the same issues in the United States and the euro area. The third section summarizes the paper's main findings.

JACOB FUNK KIRKEGAARD is senior fellow at the Peterson Institute for International Economics.

1. Real GDP data from the IMF's October 2014 *World Economic Outlook* Database shows China's 1994 GDP at RMB3,111 billion and 2015(p) GDP at RMB20,600 billion.

2. India, Russia, Brazil, and arguably Australia are also continent-sized economies. They are of less comparative relevance for China today, however, because of their lower levels of economic development (India), reliance on natural resources (Russia and Brazil), and small population (Australia).

CENTRAL-PROVINCIAL GOVERNMENT FISCAL RELATIONS IN CHINA

Much controversy surrounds the statistical demarcation of the government sector in any economy.[3] This analysis adopts a relatively restrictive measure of the government sector, namely, the regular budget revenues and expenditures of the general, central, and provincial/regional governments.

Based on the size of its general government revenues, China has a limited government sector—substantially smaller than the United States or the euro area (figure 1). Following the initiation of China's economic reforms in 1978, general government revenue declined dramatically as a share of GDP. By the early 1990s, it had fallen to a mere 10 percent—less than a third the level of the United States at the time and even further below contemporary levels in euro area welfare states. Direct fiscal control over only about 10 percent of GDP would severely restrain any government's capacity to enact reforms and policies. The reforms initiated by Premier Zhu in 1993–94 to overhaul China's fiscal, taxation, and central-provincial government relations were thus critical (see Rosen and Bao 2014 for a discussion of the 1993–94 reforms).

The Zhu reforms reversed the long decline in general government

Figure 1   General government total revenues (share of GDP), 1979–2013

a. Excludes debt issuance income.
b. Excludes the operating surpluses of public enterprises.
Sources: Rosen and Bao (2014); OECD.

revenues in China: By 2013 revenues had risen to almost 23 percent of GDP. The share of general government revenue flowing to the central government rose substantially, with its share of total revenues almost doubling, from 36 percent before reform to 67 percent after reform. As the central government's share of total general government spending did not change much, the Zhu reforms amounted to a substantial strengthening of Beijing's fiscal revenue position relative to Chinese provincial governments.

The Zhu reforms shifted the fiscal balance of power in China toward Beijing. In a political system that at the time favored promoting provincial leaders capable of generating rapid economic growth, the decline after 1994 in provincial-level fiscal resources predictably led to a search for alternative local sources of revenues. They included revenues from land sales and the establishment of local government financing vehicles for off-budget borrowing (a practice that in recent years has increasingly relied on China's shadow banking system).

At the Third Plenum, in 2013, the central government initiated a set of fundamental reforms to China's public finances and central-provincial fiscal relations. Its actions may have been spurred by the need to address the underlying reasons for widespread abuses of property rights of Chinese farmers (forced off their lands to facilitate land sales by local governments), the need to abate concerns about the build-up of off-balance sheet debt by provincial governments, or both.

---
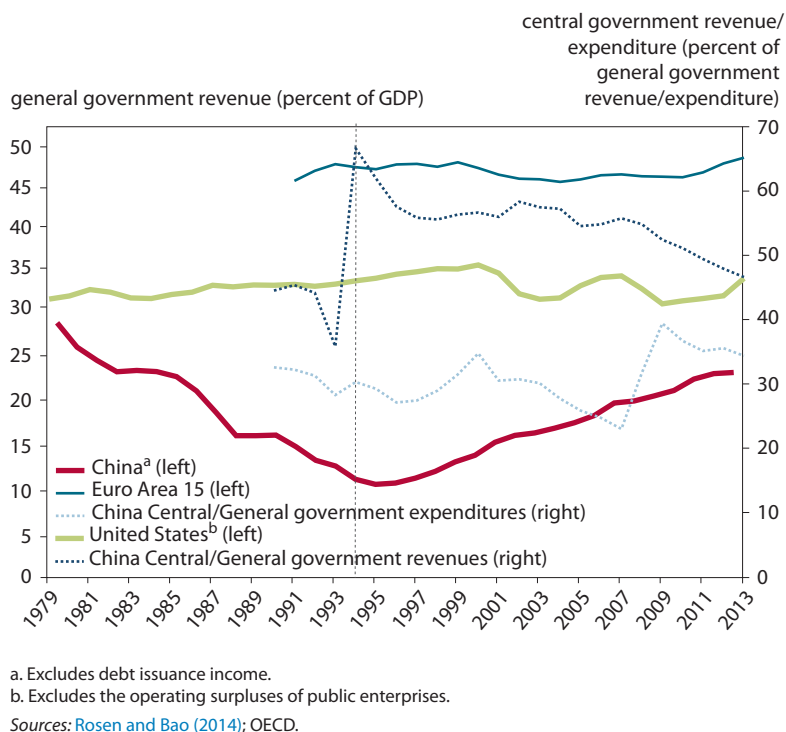
3. In the United States, for instance, Fannie Mae and Freddie Mac, the large government-sponsored mortgage finance enterprises, are under the total control of Washington but are not included in the financial statements of the federal government.

Figure 2   US federal government expenditures, 1792–2020p

percent

World War II:
1941–1945

World War I:
1917–1918

US Civil War:
1861–1865

Spanish-American
War: 1898

War of 1812:
1812–1815

Mexican-American
War: 1846–1848

European Commission
Budget in 2014 = 1.17%
of EU GDP

- Total federal government expenditure, 1792–2020p
- Total federal government expenditure, excluding
  War Department, Naval Department, and interest
  on the national debt 1792–1945
- Total federal government expenditures, excluding
  National Defense and net interest payments, 1940–2020p

p = projected

Sources: Williamson (2014). Expenditure data for 1792–1945 from US Census (1949); data for 1945–2020p from OMB (2015). Note annual data from differing fiscal year periods.

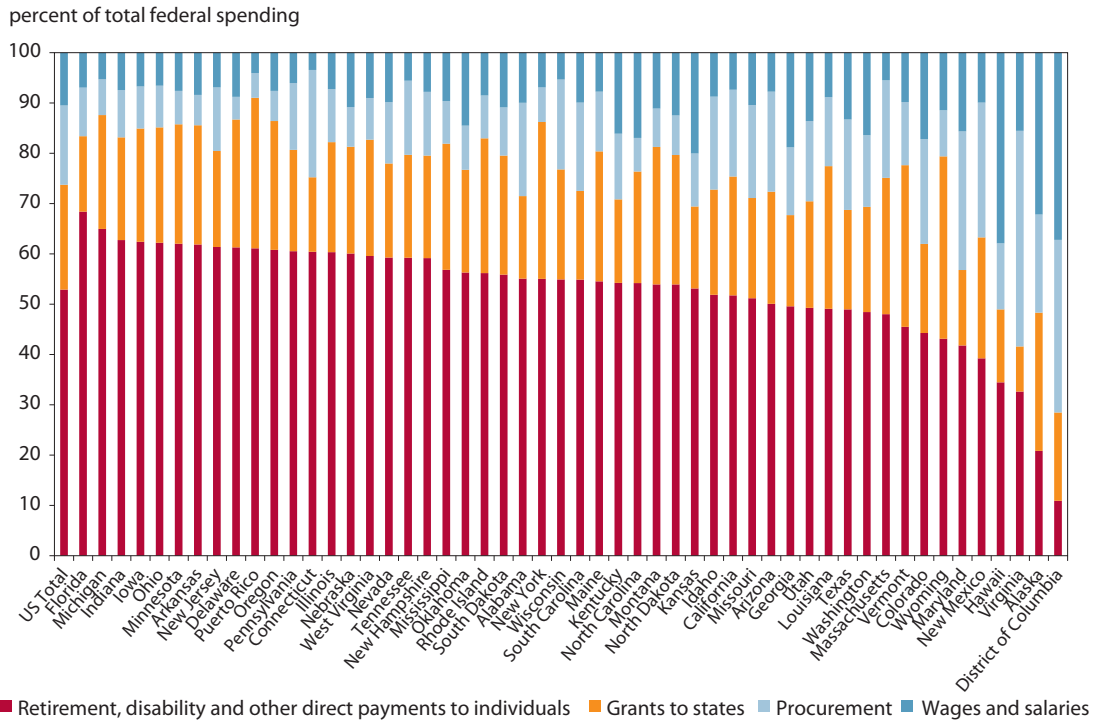## INTRAGOVERNMENTAL FISCAL RELATIONS IN THE UNITED STATES AND THE EU/ EURO AREA

Government budgets are long-lived entities that are shaped both incrementally by the political ebb and flow and by critical historical events (wars, deep economic crises, political revolutions). Given this strong path dependence, caution is warranted in drawing lessons for China from the experiences of other unions: The historical experience of fiscal federalism and budgetary integration in the United States and its embryonic state in EU/euro area should enlighten future developments in China, but their relevance and inspirational value should not be exaggerated.

In the United States, a large federal budget and associated fiscal budget transfers between states are relative recent phenomena. Only after 1917 did the nonwar share of the US federal budget exceed the current level of 1.17 percent of GDP in the European Union (figure 2).[4, 5]

---

4. The euro area has no independent ongoing budget capacity; the European stability mechanism is available only for conditional crisis lending.

5. In an example of misguided government cutbacks, the underlying data source for figure 2—the US Census Bureau's Consolidated Federal Funds Report (CFFR)—was discontinued in 2011 (see www.census.gov/govs/cffr/). Figure 2 is based on the most recent data available.

Figure 3 US federal government spending by function and state, FY2010

percent of total federal spending

■ Retirement, disability and other direct payments to individuals   ■ Grants to states   ■ Procurement   ■ Wages and salaries

Source: US Census (2011).

Only in 1935, with the establishment of Social Security, did federal nondefense expenditure in the United States permanently rise far beyond today's budget levels in the European Union.[6] Its passage marked the inception of this important function of the modern American state at the federal level and created a far larger federal government. Today more than half of all federal government expenditures in the United States—as well as in almost all US states—are social safety net benefits and other direct payments to individuals (figure 3).[7]

The functional composition of US federal expenditures arose with the implementation of a broad social safety net in the 1930s. Given that large welfare states already existed in the EU/euro area at the member state level, the European Union could not follow the US historical path to a large centralized budget. Political support for heavy centralized EU/euro area spending on social safety net items is probably far weaker than it historically was in the United States. This fact alone would make broad expansion of the central budget of the EU/euro area difficult. US historical experience suggests that in the longer run, establishment of a public social safety net accessible to the entire Chinese population may result in a sizable expansion of economic and fiscal weight of the central government in China.

---

6. Several smaller state-level pensions and specific federal systems for veterans preceded the federal Social Security program in the United States (Baily and Kirkegaard 2009), but Social Security was the first US social safety net available to most Americans.
7. Only in locations with large federal government workforces or large federal institutions (such as military bases or federal government administrative facilities) do federal government procurement and wages and salaries reach approximately 50 percent of total federal spending.

Figure 4 Total receipts/expenditures, federal and state/local governments, 1929–2014

percent of GDP

Legend:
- Federal receipts
- Federal expenditures
- State/Local receipts
- State/Local expenditures
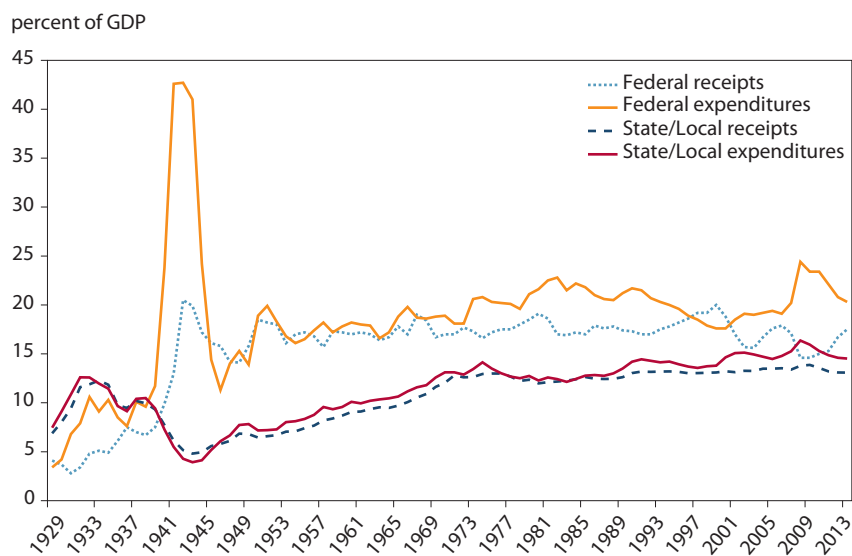
Source: Bureau of Economic Analysis, National Income and Product (NIPA) Tables.

The US federal government grew dramatically in size in the modern era. So, too, did state and local governments, the American equivalent of member state governments in the European Union and provincial governments in China (figure 4).

State/local governments in the United States were larger than the federal government until World War II. Their budgets have traditionally been balanced, thanks to constitutional clauses in most states requiring balanced budgets.[8] Countercyclical deficit spending has consequently been used only at the federal government level in the modern era. No US state has gone bankrupt since the 1870s (although numerous local went bust as late as 2013), and no US state has ever been bailed out by the federal government.[9] State and local governments in the United States have historically chosen to live within their means in the presence of a strong if implicit political "no bailout norm" at the federal level.

This historical path is the opposite of the path taken in the euro area, which has witnessed repeated conditional bailouts since 2010. With the passage of the 2012 Treaty on Stability, Coordination and Governance, the euro area did agree to implement structurally balanced budget clauses at the level of member states.[10] Member countries thus ended up in about the same balanced budget situation as US states, although they arrived there through a very different route. Provincial governments in China may end up in a similar situation, compelled to balance regular budgetary revenues with expenditures.

The federal government has been the dominant fiscal actor in the United States in the modern era, although its dominance is increasingly the result of its ability to run large deficits to finance spending rather than its greater revenue generation. Indeed, as figure 4 shows, federal revenues have exceeded state and local revenues by less than 3 percentage points of GDP since 2000, a level not seen in the United States since before World War II.
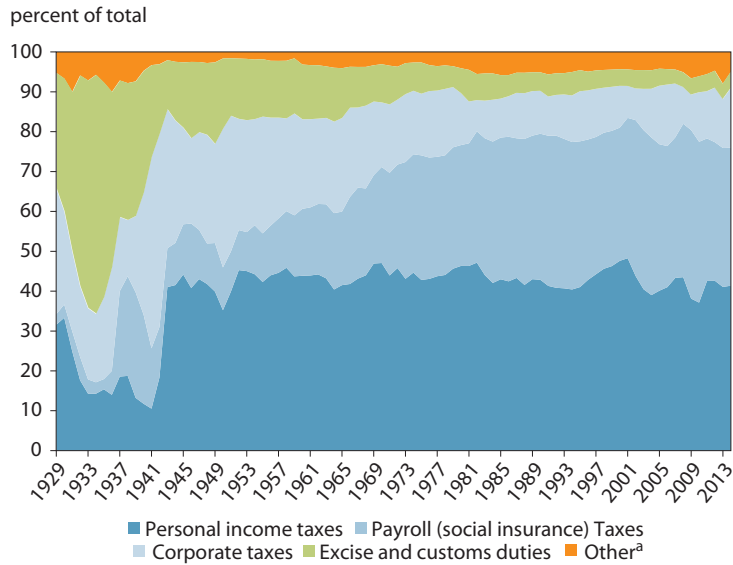
Some types of government revenue are more stable and perhaps desirable than others. In order to understand the true extent of the federal government's fiscal dominance in the United States, it is necessary to look closer at the sources of revenues at different governmental levels (figures 5 and 6).

---

8. These amendments reflected state-level initiatives passed in response to a number of 19th century state defaults (see Henning and Kessler 2012 and the literature they cite).

9. The federal government did bail out the District of Columbia in the mid-1990s. A four-year reform program under the District of Columbia Financial Control Board—replete with very IMF-like features, such as capital injections and direct budgetary control—returned the District to a surplus and self-governance by 1999 (see Henning and Kessler 2012).

10. The full text of the treaty is available at www.consilium.europa.eu/european-council/pdf/Treaty-on-Stability-Coordination-and-Governance-TSCG.
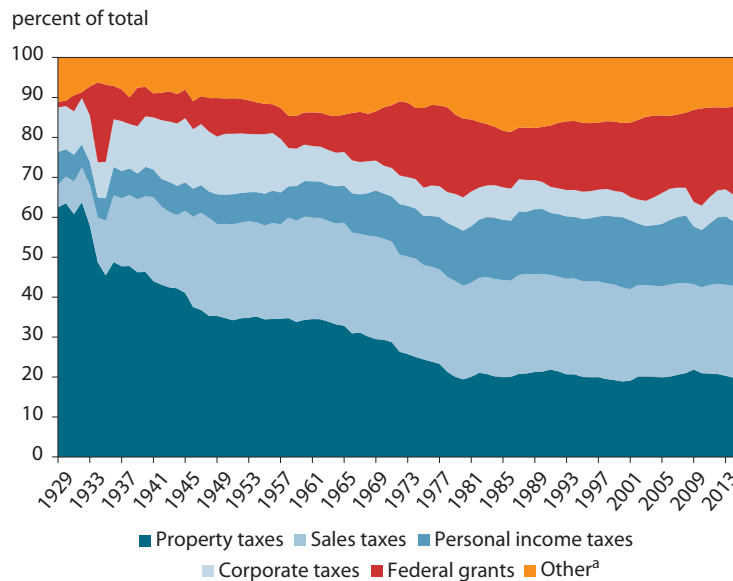
Figure 5   US federal government sources of revenue, 1929–2014

percent of total

■ Personal income taxes   ■ Payroll (social insurance) Taxes
■ Corporate taxes   ■ Excise and customs duties   ■ Other[a]

a. Includes revenues from taxes levied outside the United States, current/capital transfer receipts, income from government enterprises and other assets.

Source: Bureau of Economic Analysis, National Income and Product (NIPA) Tables.

Figure 6   US state and local government sources of revenue, 1929–2014

percent of total

■ Property taxes   ■ Sales taxes   ■ Personal income taxes
■ Corporate taxes   ■ Federal grants   ■ Other[a]

a. Includes revenues from current (nonfederal government)/capital transfers, income from state and local government enterprises and other assets and social insurance contributions.

Source: Bureau of Economic Analysis, National Income and Product (NIPA) Tables.

After World War II, the federal government relied increasingly on personal income and social insurance payroll tax revenue, as Social Security and Medicare/Medicaid expanded. Today about 80 percent of federal government income comes from these sources, with most of the rest coming from corporate taxes. Customs duties, excise taxes, and other sources play only minor roles. In contrast, at the state and local level, about 45 percent of revenues come from sales and property taxes, less than 20 percent comes from personal income taxes, and just 5–7 percent comes from corporate taxes.

The absence of a federal sales tax, value added tax (VAT), and property tax in the United States means that a de facto division of revenue sources between the federal and state/local level remains that cannot be 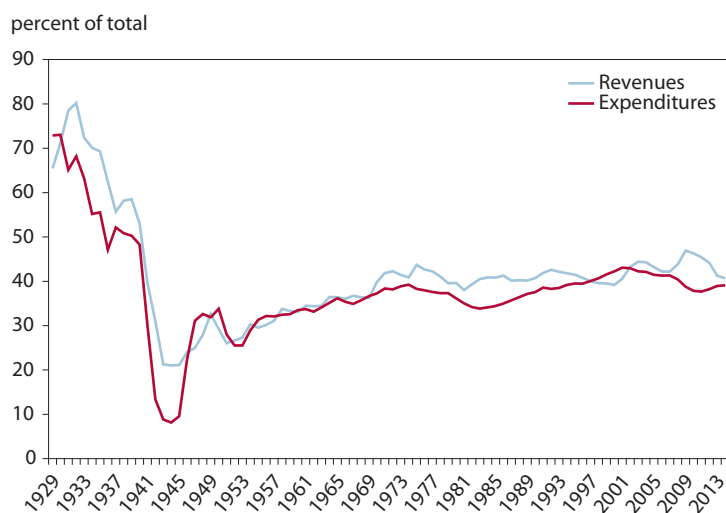replicated in the euro area, where member states rely extensively on all sources of revenues. The federal and state/local level governments in the United States share corporate tax revenues, and direct transfers from the federal government to the states are sizable (accounting for about 20 percent of state/local revenue). As a result—and quite unlike the situation in China post-1994 shown in figure 1—the weight of US state/local governments' total revenues and expenditure commitments in the general government sector has historically been roughly equal (figure 7). With broadly balanced shares of the general government's spending and revenue commitments, US state and local governments have thus not historically faced the need to raise substantial off-budget revenues to balance their budgets.

The US experience highlights how taxation levels can vary between states within a relatively narrow range of sources (corporate, property, sales, and even personal income taxes). State governments use these revenue categories to raise their own fiscal resources without creating substantial economic distortions. Range-bound differences across states in these areas may also provide healthy "policy competition" among different regions of a continental economy.

Figure 7   US state and local government share of general government revenues and expenditures, 1929–2014

percent of total

Source: Bureau of Economic Analysis, National Income and Product (NIPA) Tables.

The much larger differences in tax rates of all kinds within the euro area are the subject of intense political friction among European leaders. Convergence among several member states' key tax rates has emerged in recent years. Corporate tax rates within the euro area have consistently fallen, to an average level of about 20 percent in 2014.[11] This trend indicates how regional taxation on mobile factors is subject to downward competitive pressure inside an integrated continental economy. At the same time, a "race to the top" has arguably taken place in VAT rates, which member states have consistently raised in recent years (the EU average was 21.6 percent in 2014).[12] There has consequently been a clear shift toward taxation of less geographically mobile factors inside the euro area in recent years.

---

11. See KPMG Global Corporate Tax Rate Table 2014, www.kpmg.com/global/en/services/tax/tax-tools-and-resources/pages/corporate-tax-rates-table.aspx.

12. The average VAT for the euro area was 21.3 percent. Only three EU members—Germany (19 percent), Luxembourg (17 percent), and Malta (17 percent)—have standard rates below 20 percent, even though the EU minimum VAT is 15 percent. Recent years have seen substantial scale-backs in member states' application of reduced VAT rates to specific goods and services categories (often categories like food, safety equipment, and books and newspapers). See European Commission (2015) for details.

Figure 8   How do Europeans identify themselves, autumn 2014

percent

Legend: ■ National only ■ National first, then european ■ European first, then national ■ European only
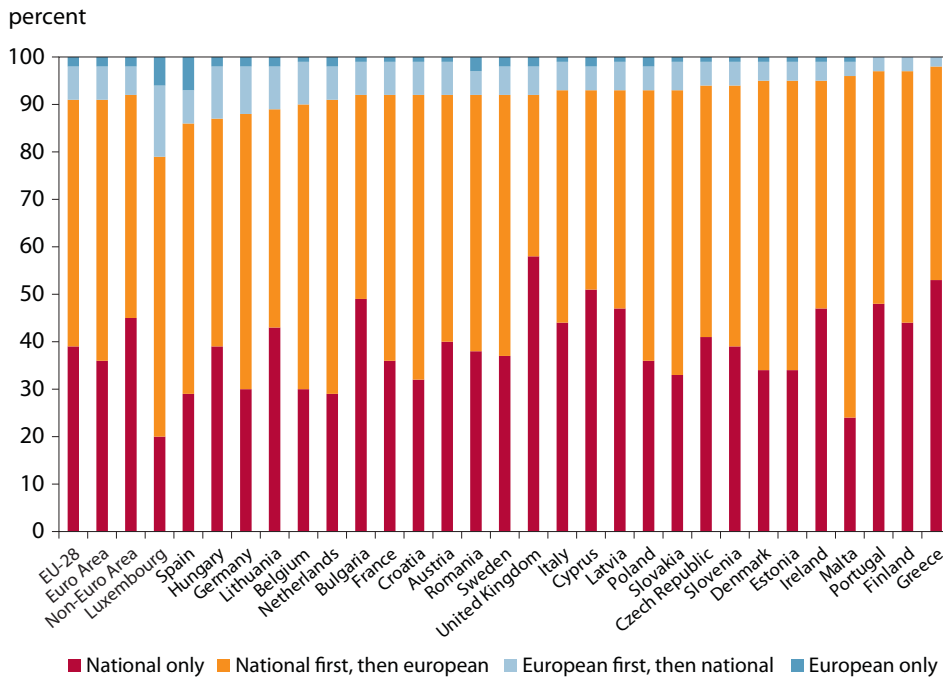
Note: Data refers to the answer to the question "Do you see yourself as.....?"
Source: Eurobarometer 82.

Fiscal relations within the United States and EU/euro area highlight how the largest and cyclically relatively stable (hence economically desirable) source of government revenues in personal income and payroll taxes resides overwhelmingly with the central government level. Legitimate taxation generally resides with the geographic entity and governmental level where the population's self-identity lies. It is a frequently repeated fact that the willingness of Americans to pay taxes is generally lower than that of Europeans. That, however, is correct only at the general government level, as Americans are far more willing to pay taxes as the "continental level" (e.g., federal government level) than are Europeans to the European Union in Brussels, where, as the EU budget for 2014–20 reveals, the willingness is precisely zero. The fact that Europeans are willing to be taxed only at the national member state level is unsurprising given that they overwhelmingly self-identify at the national level.

The majority of taxpayers in the United States self-identify as American.[13] In contrast, on average more than 90 percent of Europeans self-identify exclusively or primarily at the member state level (as Germans, Spaniards, Italians, etc.), as figure 8 shows. Until Europeans self-identity first as Europeans—which may not happen for generations, if ever—taxpayers in the EU/euro area are highly unlikely to accept anything near the current levels of US federal taxation. The European experience suggests that the presence of strong regional self-identities may restrict the degree of fiscal centralization and dominance the central government in China can achieve.

---

13. The United States is different from European countries in that it is defined by the legal rights granted by the Constitution rather than an "overlapping nation" and associated specific national *leit-kultur*.

The very different abilities of the central government in the United States and EU/euro area to levy personal income taxes has implications for the degree of fiscal transfers that can be achieved. Fiscal transfers within the EU/euro area will probably remain about the size they are in the current EU budget. These transfers are smaller than the fiscal transfers among US states effected through the federal budget.[14] The level of realizable fiscal transfers in the euro area will remain in the middle of figure 9—well below levels in the United States and far from the level that optimal currency area theory would stipulate.[15]

The optimal currency area argument for using fiscal transfers to mitigate the economic effects of asymmetric shocks is intuitively persuasive. But a currency area need not be even close to optimal to function, especially if other circumstances exist. Foremost among them is the prohibitively high political and economic costs of unraveling a currency area, which facilitates sustained political acceptance of the status quo even if it exacerbates economic volatility and causes associated societal welfare losses: Once they realize that their prison is escape proof, inmates typically learn to cope with life on the inside rather than try to escape. Numerous reports quantifying the extremely high costs of breaking up the euro area and regional policymakers' repeated protestations of the euro's irreversibility suggest that this is indeed the situation in the euro area today, including in Greece, where despite economic hardship, public support for euro membership remains overwhelming.

Assuming that the euro area is doomed to eventual collapse unless in the longer term it develops into something much closer to an optimal currency area is thus probably politically naïve. Suggestions that the euro area adopt a mechanism akin to the fiscal transfer mechanism of the US federal government are normative. The euro area would undoubtedly operate much closer to the optimal currency area frontier if it had a federal transfer budget of US magnitude, but it can still function without such a mechanism. The same politically determined ability to develop something quite different from what optimal currency area theory would ideally stipulate will apply also to China's continent-size fiscal union in the future.

CONCLUDING REMARKS

This paper investigates the historical developments of the fiscal union in the United States and the embryonic fiscal integration in the EU/euro area to draw potential lessons for Chinese leaders. At least four messages emerge from the analysis.

First, US and (particularly) recent European experiences highlight the need for transparency and commonly enforced budgetary standards across all levels of a continent-size fiscal union. The fact that essentially all recent fiscal emergencies in the United States and the euro area have emerged because of the initial ability of states (in the United States) and member states (in the euro area) to conceal the true scale of their problems (via creative accounting practices) highlights the importance of this challenge—and the inability of even advanced economies to address it. State and local governments in the United States routinely obfuscate the level of underfunding of their pension funds and healthcare systems. The deceitful fiscal management practices of the Greek government directly contributed to the crisis that first erupted in late 2009. Unless Chinese leaders manage to do better than both the United States and EU/euro area in terms of implementing common and transparent local government fiscal budgeting practices, local fiscal crises seem inevitable in China, too.

---

14. Figure 9 is estimated on the expenditure side, assuming that the federal fiscal deficit is distributed to US states based on their current relative contributions to federal government revenue. It therefore assumes that changes to US fiscal policy to close the fiscal deficit fall evenly on the states—a heroic assumption. For the EU budget, figure 9 assumes that nonnational revenues (about €15 billion) from sources such as sugar duties and customs levies are distributed to member states based on their relative national revenue contributions.

15. For discussions of the optimal currency area, see Mundell (1961), McKinnon (1963), and Kenen (1969).

Figure 9 Implied fiscal redistribution among US states and EU members in US federal and EU budgets, FY2010

percent of GDP
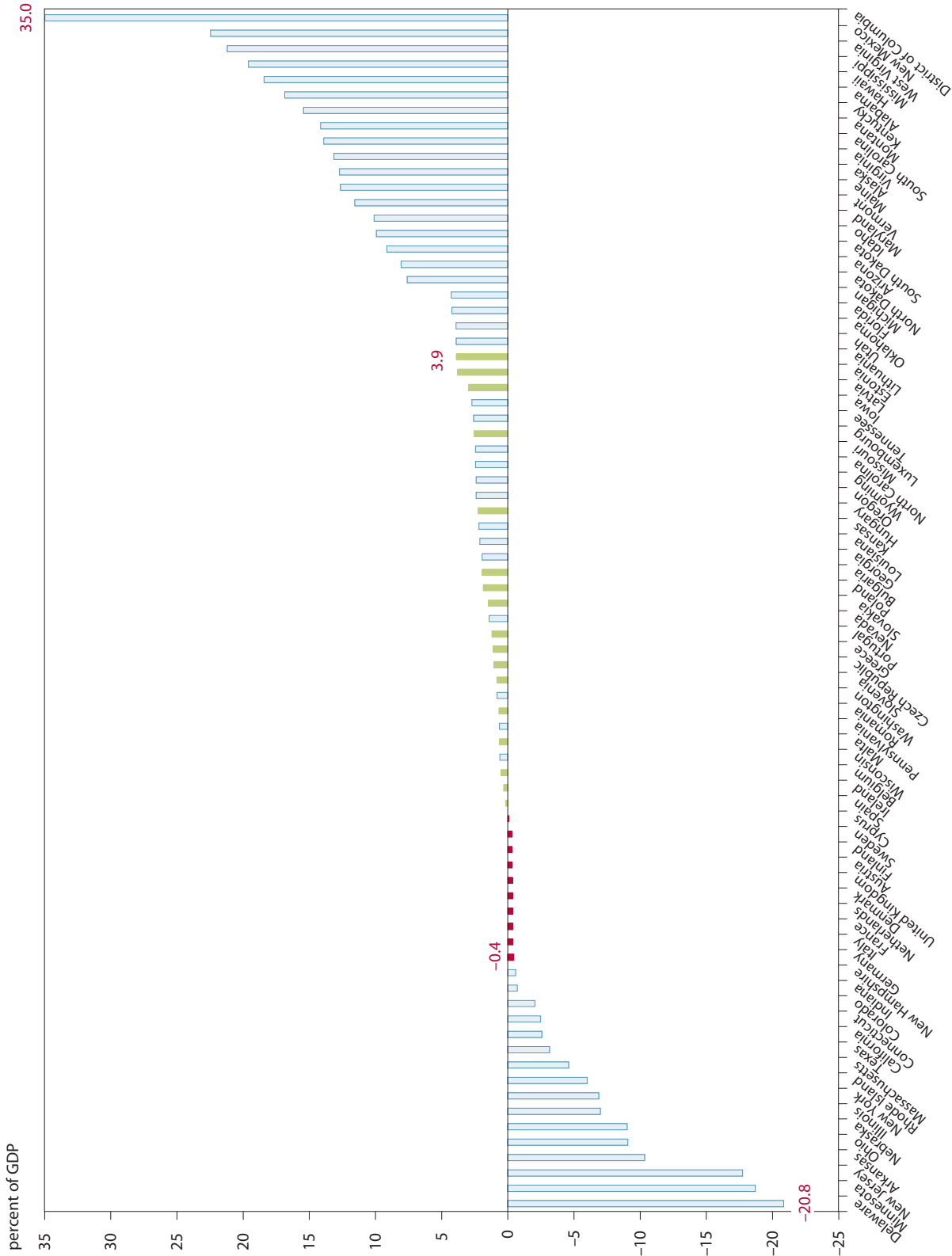
Note: Because the US Census stopped publishing this series, FY 2010 data are the most recent available.

Sources: European Commission (2011); IRS (2011); US Census (2011).

Second, China must achieve a far better balance between provincial governments' budget revenues and expenditure commitments than is in place today. The requirement that provincial governments raise large amounts of off-budget revenue must be ended. Requiring provincial governments to achieve close to balanced budgets by granting them the right to raise an appropriate amount of their own tax revenue and receiving ongoing but limited transfers from the central government seems appropriate.

Third, fiscal responsibility for China's expanding social safety net should reside with the central government. Allocating this responsibility to the central government would facilitate large countercyclical automatic stabilizers in the central budget, which could alleviate the effects of adverse regional economic shocks.

Fourth, China should strive for a distribution of tax revenue between the central and provincial governments that minimizes economic distortions between geographic regions. In the United States and EU/euro area, revenues are collected by the level of government with which populations self-identify most. Their experiences also suggest that sharing specific categories of tax revenues between the central government and provinces is doable and that no level of government ought to have a monopoly on a particular revenue source. Range-bound differentials in corporate, sales/VAT, income, and other tax categories do not create prohibitive economic costs but rather promote healthy policy competition among regional governments.

REFERENCES

Baily, M., and J. F. Kirkegaard. 2009. *US Pension Reform: Lessons from Other Countries*. Washington: Peterson Institute for International Economics.

BEA (Bureau of Economic Analysis). n.d. Online NIPA Tables Database. Available at www.bea.gov/iTable/index_nipa.cfm.

European Commission. 2011. *EU Budget 2011: Financial Report*. Available at http://ec.europa.eu/budget/financialreport/pdf/fin_report_11_en.pdf.

European Commission. 2014. *Standard Eurobarometer 82*. Available at http://ec.europa.eu/public_opinion/archives/eb/eb82/eb82_citizen_en.pdf.

European Commission. 2015. VAT Rates: Applied in the Member States of the European Union. Available at http://ec.europa.eu/taxation_customs/resources/documents/taxation/vat/how_vat_works/rates/vat_rates_en.pdf.

Henning, R., and M. Kessler. 2012. *Fiscal Federalism: US History for Architects of Europe's Fiscal Union*. Peterson Institute Working Paper 12-1. Washington: Peterson Institute for International Economics. Available at www.piie.com/publications/interstitial.cfm?ResearchID=2018.

IRS (Internal Revenue Service). 2011. IRS *Databook Fiscal Year 2010*. Available at www.irs.gov/pub/irs-soi/10databk.pdf/.

Kenen, Peter. 1969. The Theory of Optimum Currency Areas: An Eclectic View. In *Monetary Problems of the International Economy*, ed. R. Mundell and A. Swoboda, 41–60. Chicago: University of Chicago Press.

Lasswell, Harold D. 1936. *Politics: Who Gets What, When, How*. New York: Whittlesey House.

McKinnon, Ronald I. 1963. Optimum Currency Areas. *American Economic Review* 53 (September): 717–24.

Mundell, Robert A. 1961. A Theory of Optimum Currency Areas. *American Economic Review* 51 (November): 509–17.

OECD (Organization for Economic Cooperation and Development). n.d. OECD Online Statistical Database. Available at www.oecd-ilibrary.org/statistics.

OMB (Office of Management and Budget). 2015. The 2015 Budget: Historical Tables. Available at www.whitehouse.gov/omb/budget/Historicals.

Rosen, Daniel H., and Beibei Bao. 2014. *China's Fiscal and Tax Reforms: A Critical Move on the Chessboard*. Rhodium Group Note, July 11, New York.

US Census Bureau. 1949. *Historical Statistics of the United States 1789–1945: A Supplement to the Statistical Abstract of the United States*. Washington: US Department of Commerce. Available at www2.census.gov/prod2/statcomp/documents/HistoricalStatisticsoftheUnitedStates1789-1945.pdf.

US Census Bureau. 2011. *Consolidated Federal Funds Report for Fiscal Year 2010*. Washington: US Department of Commerce. Available at www.census.gov/prod/2011pubs/cffr-10.pdf.

US Treasury. 2014. *2013 Financial Report of the United States Government: Notes to the Financial Statements—Note 9. Investments in and Liabilities to Government-Sponsored Enterprises*. Washington. Available at www.fms.treas.gov/finrep13/note_finstmts/fr_notes_fin_stmts_note9.html.

Williamson, Samuel H. 2014. The Annual Real and Nominal GDP for the United States, 1790–2013. MeasuringWorth.com. Available at www.measuringworth.com/usgdp/#.

CHINA'S CONTRIBUTION TO REDUCING GLOBAL INCOME INEQUALITY

TOMÁŠ HELLEBRANDT AND PAOLO MAURO

One of the defining features of the past decade or more has been the significantly faster growth in emerging economies (notably China and India) than in advanced economies, a process that is projected to continue over the next two decades. Major changes in the geographic composition of the world's population are also on the way, with projections of a demographic explosion in Africa, strong population growth in India, and an essentially stable population in China and the advanced economies. These economic and demographic changes will transform the global distribution of income and with it patterns of consumption, in terms of both the goods and services demanded and the location of consumers.

In the advanced economies, recent decades have seen increased concern over income and wealth inequality and in particular the fabulous riches accruing to people at the very top. In contrast, in emerging economies, hundreds of millions of people have been lifted out of poverty, into the middle class, and even into affluence comparable to that normally associated with advanced economies. China's success has played a key role in this trend. It is a mark of the country's remarkable achievements that the median income in China recently surpassed the world median (in purchasing power parity [PPP] terms).

Indeed, while distributional changes within countries are important, one should not lose sight of the fact that many global issues are influenced by the whole distribution of income worldwide. With rising incomes in developing and emerging market economies, hundreds of millions of people will be lifted from abject poverty to "working poor" levels, where they can afford a better and more varied diet and basic consumer goods. Hundreds of millions of others will move from modest consumption levels to a degree of affluence currently associated with advanced economies. The ability to participate in and benefit from economic growth has immediate and tangible impacts on the lives of the bulk of the world's population.

In addition to improving welfare, increases in consumption and changes in its composition will present opportunities for companies and investors. These changes will also pose policy challenges, including challenges related to pressures on scarce natural resources and climate change. Indeed, both these positive developments and the policy challenges stemming from them have already become apparent in the largest emerging markets, including China, and are likely to intensify in the years ahead.

This study builds on earlier work by the authors that combines existing projections of population and output growth with the highest-quality information available about within-country income distributions (drawn from household surveys in a large number of countries that covers almost the entire world). We use these data to project the number of individuals in various income brackets (e.g., $10,000–$11,000 in today's

TOMÁŠ HELLEBRANDT is research fellow at the Peterson Institute for International Economics. PAOLO MAURO is senior fellow at the Peterson Institute for International Economics.

prices) in 2035, on the assumption that within-country income inequality remains at the level observed in the surveys of the late 2000s. This methodology makes it possible to compare the worldwide distribution of income two decades from now with the current situation and to calculate changes in global inequality that will result from different growth rates in population and GDP in different countries. Moreover, as the composition of consumption baskets depends on incomes, projections of the number of people in each income bracket will facilitate a better-informed analysis of the levels of consumption of various goods and services in the future, their distribution across the globe, and associated policy challenges.

Our key results include the following:

- Global income inequality started declining significantly at the turn of the 21st century, with the global Gini coefficient falling from 69 in 2003 to 65 in 2013. During this period, China's median individual income rose from $730 to $2,200, compared with growth of the worldwide median from $1,090 to $2,010. Had China's per capita GDP grown at the same rate as the rest of the world, the global Gini coefficient would have declined to just 67.

- Global income inequality will continue to fall during the next two decades, based on what we consider the profession's consensus projections for the growth rates of output and population. In the baseline projections, the Gini coefficient for the worldwide income distribution is expected to decline from 65 in 2013 to 61 in 2035. The projected improvement will continue to stem primarily from faster economic growth in developing and emerging market economies than in advanced economies. Chinese growth above the world average will improve overall welfare, but it will play a smaller role than in the past in reducing global inequality.

- Under an alternative "reversion to the mean" scenario, in which countries' economic growth rates are projected to gradually revert toward the worldwide sample mean, inequality will decline more slowly, to a Gini coefficient of 64 in 2035.

- Under an "optimistic scenario" for India and China—in which both economies continue to grow 7 percent a year for the next two decades, thanks to sound economic policies and reforms—the global Gini coefficient would fall to 63 in 2035 but with opposing contributions from the two countries. Higher than average growth in India would continue to reduce global inequality; a slowdown in growth in China would increase global inequality.

- Under the baseline scenario, we project major increases in the potential pool of consumers worldwide, with the largest net gains in developing and emerging market economies. For example, using income groups based on thresholds selected by the World Bank in its Global Consumption Database, the number of people earning $1,144–$3,252 a year in 2013 prices in PPP terms would increase by about 600 million, with the largest gains in Sub-Saharan Africa and India. The number of people earning $3,252–$8,874 a year in 2013 prices would increase by 700 million, with the largest gains in Sub-Saharan Africa and East Asia. The number of people earning more than $8,874 a year would increase by 1.4 billion, with the largest gains in China and India.[1]

---

1. The thresholds selected by the World Bank for the Global Consumption Database (GCD) were originally set in 2010 US dollar amounts in PPP terms. We adjusted them by US CPI inflation over 2010–13 to retain the same real value. The thresholds were originally selected to be the bottom 50 percent, the 51st–75th percentiles, the 76th–90th percentiles, and the top decile of the global distribution in 2010 based on household surveys for 92 countries. Although these thresholds and the groups they identify could be viewed as somewhat arbitrary, we chose them for consistency with the consumption data, which are published on the GCD website for those groups.

METHODOLOGY

This section outlines the methodology used to obtain the key results reported in this chapter (for more detail, including data sources, see Hellebrandt and Mauro 2015). We combine projections for population growth and output growth drawn from reputable sources (the United Nations for population; the Organization for Economic Cooperation and Development [OECD], Consensus Forecasts, the International Monetary Fund [IMF], and the World Bank for economic growth) with high-quality microeconomic data on within-country income distributions based on household surveys (the Luxembourg Income Study for the main advanced and emerging market countries; the World Bank for the remainder). Data for GDP are expressed in PPP terms (2011 international US dollars).

Consistent with our interest in measuring the income and consumption patterns of individuals—reflecting differences both within and between countries—we focus on the global interpersonal distribution of income, or "global inequality." In the absence of a global survey of incomes, estimates of global inequality have to combine data from national surveys.

The income data, expressed in national currency at current prices, are then converted to a common numeraire using the World Bank PPP conversion factors for 2013 from the 2011 International Comparison Program. Using PPP exchange rates helps make global interpersonal income comparisons reflect relative purchasing power across countries more accurately.[2]
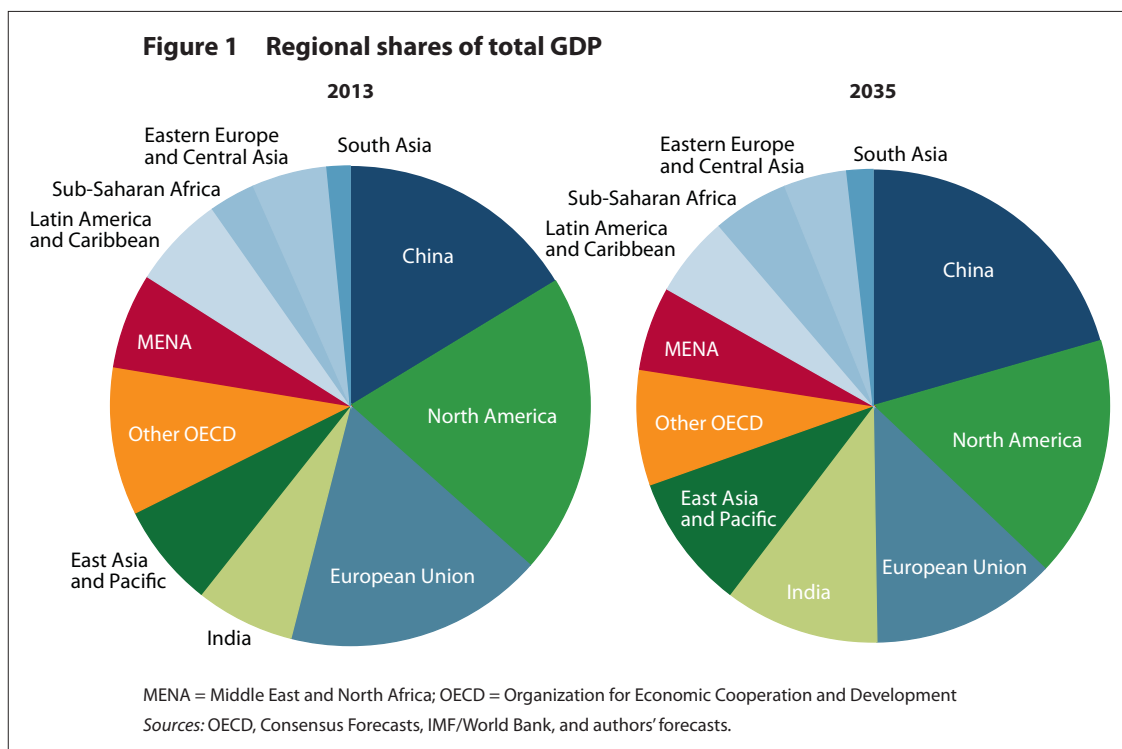
In projecting income distribution patterns around the world over the next two decades, we made a key assumption in the baseline projections that income distribution will not change within each country. In reality within-country inequality will probably increase in some countries and fall in others. The assumption of no change is a simplifying assumption driven by the fact that a multitude of factors that vary across countries and over time affects the distribution of income, making it very difficult to make even an informed guess about the likely future path of within-country inequality over a 20-year period for every country.

There is strong evidence to suggest that economic growth has no systematic effect on the distribution of incomes one way or the other. For example, in a global dataset of 118 countries over the past four decades, changes in the share of income accruing to the bottom two quintiles in individual countries are generally small and uncorrelated with changes in average income (Dollar, Kleineberg, and Kraay 2013). Although studies based on tax return data (notably, Atkinson, Piketty, and Saez 2011) find a larger share of income accruing to the top percentile of the population in some large advanced economies, comprehensive analysis of household survey data for a broader range of countries reveals a more mixed picture of inequality trends. For changes since 1995 (101 countries) and since 2000 (113 countries), about half of the countries in the sample experienced a fall in the Gini index greater than one point (on a 0–100 scale), about a third experienced a rise of more than one Gini point, and the remainder experienced little or no change.

Because these observations are based on different data sources (tax returns and household surveys) and different portions of the distribution (the top percentile versus the whole distribution), they are not mutually inconsistent. Household surveys tend to underrepresent the very richest households and may therefore not fully capture the rising share of income going to the very top. These surveys indicate that changes in the distribution below the very top are mixed across countries.

As with economic growth, it is not straightforward to identify empirical associations between other possible underlying factors and changes in income distribution. One could well conjecture that increases in the share of income accruing to the more affluent may stem from technological factors and globalization. But such associations are not easily found in panels of countries. Forecasting changes in such underlying factors over a 20-year period would be even more challenging.

---

2. Nontraded goods and services—an important component of consumption baskets—tend to be less expensive in emerging economies and developing countries than in advanced economies. Market exchange rates understate this price difference; PPP exchange rates adjust for it.
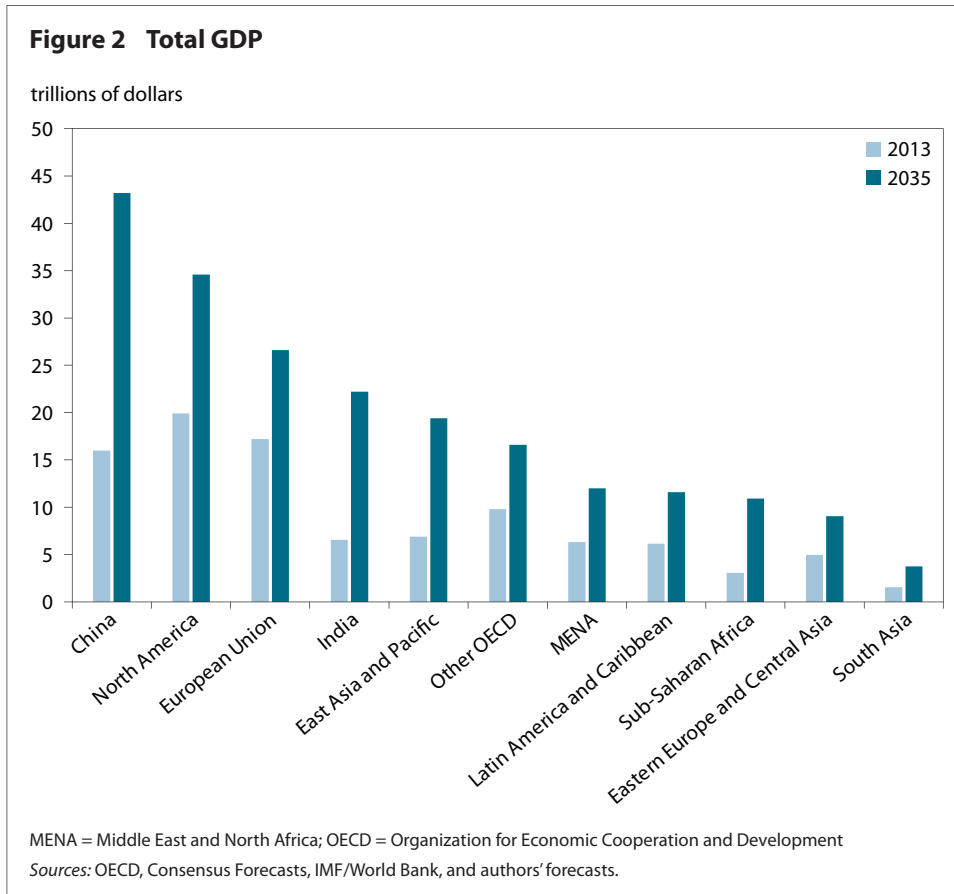
Figure 1   Regional shares of total GDP

MENA = Middle East and North Africa; OECD = Organization for Economic Cooperation and Development

Sources: OECD, Consensus Forecasts, IMF/World Bank, and authors' forecasts.

RESULTS

Worldwide GDP and Population in 2035

Before turning to the distribution of incomes worldwide, it is worth reporting some overall statistics for 2013 and examining the implications of the individual-country projections reported in the previous section for worldwide GDP and population in 2035. In 2013 total GDP for a nearly universal sample of 186 countries amounted to $98.5 trillion (here and throughout, unless otherwise indicated, dollar amounts are expressed in US dollars at 2011 international prices [i.e., in constant prices at PPP estimated in 2011]). World population was estimated at 7.02 billion inhabitants in 2013. These two statistics yield an average per capita GDP for the world of about $14,000 in 2013.

Looking to 2035, the projected GDP for all countries in the sample yields a total GDP of $210.0 trillion, equivalent to an average worldwide GDP growth rate of 3.5 percent a year over the next two decades. Based on its medium-fertility assumptions, the United Nations projects that the world population will reach 8.56 billion in 2035, a cumulative 21.9 percent increase worldwide since 2013, or 0.9 percent a year on average. These figures suggest global average per capita GDP of about $24,500 in 2035, and average annual real per capita growth of 2.6 percent during the 20-year period.

The allocation of worldwide output by country groups and regions will also change considerably (figure 1). The projections imply that the share of developing and emerging economies in total worldwide real output would rise from 56.2 percent in 2013 to 66.7 percent in 2035. Under this baseline scenario, in 2035 the largest economies will be China (20.6 percent of total world GDP), the United States (13.5 percent), the European Union (12.7 percent), and India (10.6 percent). Figure 2 shows gains in real terms for each region over the same period. The results reported above are for the whole sample of 186 countries for which population and GDP growth projections are available.

Figure 2 Total GDP

trillions of dollars

MENA = Middle East and North Africa; OECD = Organization for Economic Cooperation and Development
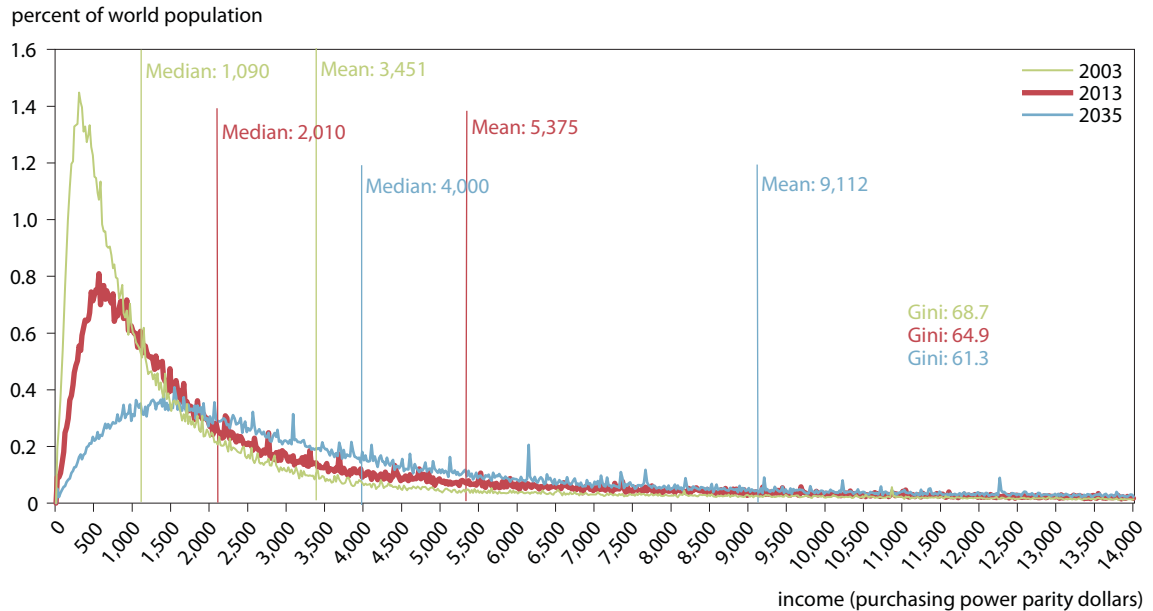*Sources:* OECD, Consensus Forecasts, IMF/World Bank, and authors' forecasts.

The overall results in terms of total GDP and population growth are fairly similar for the subsample of 141 countries for which inequality data are available. Indeed, the countries for which inequality data are not available are relatively small in terms of both population and total output; the average rates of growth of total GDP, per capita GDP, and population for the 141 countries are almost identical to those in the larger sample.

Worldwide Distribution of per Capita Incomes

The projected worldwide distribution of household incomes in 2035 is shown in figure 3, alongside the distributions for 2003 and 2013 (the latest year for which data were available at the time of writing). The frequency plot represents the share of the world's population corresponding to each annual per capita income bracket (at $20 intervals, in international US dollars in 2011 prices). The usual skewness of income distribution is apparent, with a large share of the world's population earning meager incomes and an extended right-hand side tail earning much higher than average incomes. The median per capita income in 2013 was $2,010 (up from $1,090 in 2003), and the mean was $5,400 (up from less than $3,500 in 2003). As is well known from previous studies of global poverty or global income distribution, the gap between mean income from household surveys and GDP per capita is large and stems from a variety of not fully understood factors. We follow Chen and Ravallion (2010) and Milanović (2005) in using the mean incomes from household surveys, because we believe this measure leads to a more accurate distribution of incomes below the very top.

To put these estimates of the mean and median global incomes in context, the US poverty line in 2014 for a family of four with two dependent children was about $24,000 at current prices, or about $6,000 per person

Figure 3   Frequency plot of global income distribution, 2003, 2013, and 2035

percent of world population

Median: 1,090   Mean: 3,451
Median: 2,010   Mean: 5,375
Median: 4,000   Mean: 9,112

Gini: 68.7
Gini: 64.9
Gini: 61.3
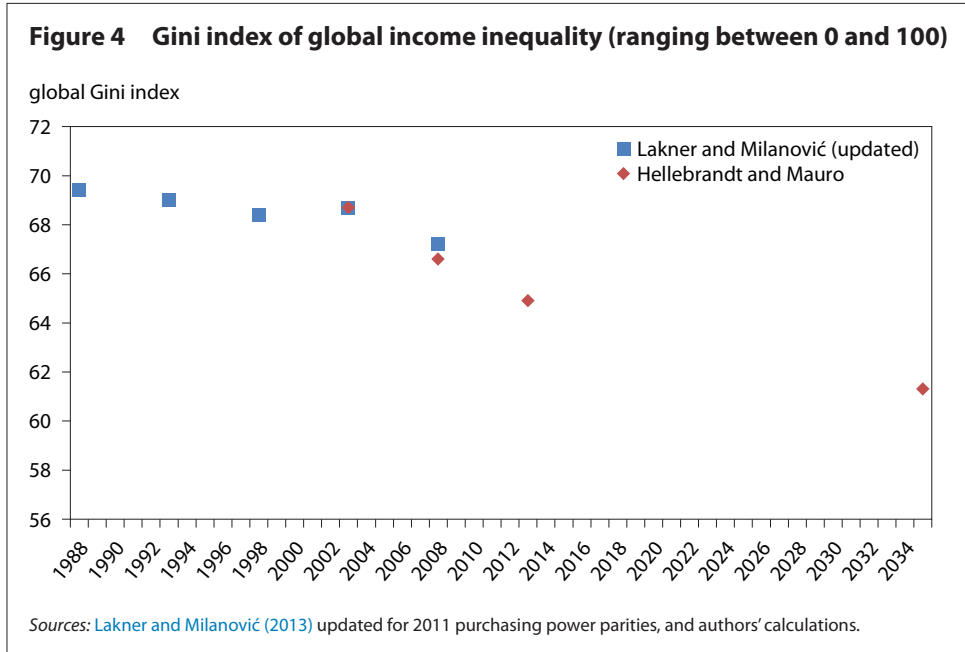
2003
2013
2035

income (purchasing power parity dollars)

Notes: Percent of world population for each $20 interval is reported on the vertical axis. Individual incomes on the horizontal axis are expressed in US dollars at 2011 international prices (purchasing power parity).

Sources: OECD, Consensus Forecasts, IMF/World Bank, and authors' forecasts for growth; United Nations for population projections; LIS and World Bank for household survey data on income distribution.

living in such a household. Our estimates suggest that three-quarters of the world's population had incomes below the official US poverty line in 2013. Most developing economies also have significant shares of middle-class and rich individuals, as shown below.

Taking the global distribution of income as a whole, the Gini coefficient was 64.9 in 2013, down from 68.7 in 2003. An alternative inequality measure is the 90:10 ratio, which measures the ratio of the income of the 90th percentile of the distribution to that of the 10th percentile. For the world as a whole our estimates suggest a ratio of 31 in 2013.

Worldwide median individual income is projected to double to $4,000 in 2035 (expressed in 2011 US international dollars), and average individual income is projected to reach $9,100, as shown in figure 3. The Gini coefficient is projected to decline to 61.3 and the 90:10 ratio to 24. Thus the worldwide distribution of income would become less unequal, although it would remain well above the inequality level seen in most countries. The main driving force underlying the shift toward greater equality worldwide during the next two decades is more rapid growth in developing and emerging market economies than in advanced economies.

Our projections indicate that economic growth will continue to pull millions of people out of absolute poverty. Using the World Bank's poverty threshold of per capita income below $1.25 a day in 2005 prices ($1.46 per day in 2011 prices), our analysis suggests that the number of people living in poverty will fall from about 850 million (12.3 percent of the total population in our sample) in 2013 to about 300 million (3.6 percent of the projected population in our sample) in 2035. Hundreds of millions of people in developing and emerging market economies will move into income categories considered middle class by advanced economy standards. These massive gains notwithstanding, more than half of the world's population in 2035 will still be below the US poverty level as defined today.

Figure 4   Gini index of global income inequality (ranging between 0 and 100)

global Gini index

Sources: Lakner and Milanović (2013) updated for 2011 purchasing power parities, and authors' calculations.

To provide some historical context for the 2013 estimate and 2035 projection, we estimated the global distribution of income for 2003 and 2008. Figure 4 shows the time series of our estimates (in red) against the estimates of Lakner and Milanović (2013) (in blue) updated with new PPP estimates from the 2011 International Comparison Program. Our estimates for 2003 and 2008 align closely with those of Lakner and Milanović , suggesting that our estimate for 2013 and projection for 2035 may be consistent with their estimates for previous decades. The results point to a continued decline in global inequality that started at the turn of the century and may be attributed to a significant extent to rapid growth in China. Global inequality was broadly stable between 1988 and the end of the 20th century.

"Reversion to Mean" Scenario

Some commentators have suggested that long-run economic growth forecasts are often overly optimistic, especially for emerging and developing economies that grew rapidly over the past few decades, such as China and India (Pritchett and Summers 2014). Given the uncertainty surrounding such forecasts, we examine the implications of alternative assumptions.

Specifically, we choose an alternative scenario (based on projections constructed by Ho and Mauro 2014) using a simple autoregressive process: $g_{2014-35} = a + b \, g_{1993-2013}$, where a and b were estimated through panel regressions applied to Penn World Tables data on real per capita GDP for 188 countries over 1950–2010 (subject to availability). Growth for 2014–35 is projected by applying the estimated a and b coefficients to a country's past growth (1993–2013). By allowing for some autocorrelation while projecting a gradual reversion toward the worldwide sample mean, this approach reduces the likelihood of overoptimistic projections stemming from excessive extrapolation of recent successes.

It turns out that this alternative "reversion to mean" (RTM) method has only a small effect on the projections for China, reducing its average growth rate during the next two decades from 4.4 percent to 4.0 percent, because the OECD projections for China in our baseline scenario already assume a gradual but significant slowing of Chinese growth after 2015. For India the difference between the baseline and RTM scenario is much

larger: Average growth rates under the two scenarios are 4.8 percent and 2.6 percent, respectively. Overall the gap between baseline and RTM projections is larger, on average, for developing and emerging economies than for advanced economies, reflecting the relatively weak performance of the latter during the past two decades. Consequently, the downward adjustment of projected income growth is larger for individuals lower down the global distribution of incomes.

Consistent with the larger downward revision in growth projections in emerging and developing economies compared with advanced economies, a much lower reduction in global inequality is foreseen in the RTM scenario than in the baseline scenario. The Gini coefficient, which was 64.9 in 2013, is projected at 64.2 in 2035 under the RTM and 61.3 under the baseline scenario. With a smaller gap between the projected growth rates of emerging and developing economies versus advanced economies, worldwide inequality would decline at a considerably slower pace.

Optimistic Scenario for China and India

As an alternative, we consider a scenario in which China and India grow at significantly higher rates than in the baseline scenario while the rest of the world follows the RTM scenario. Specifically, we assume that total income in India grows at an average annualized rate of 7 percent for 2014–35 and income in China grows at 7 percent for the first 10 years and 6 percent thereafter. (In the baseline scenario, the forecasts prepared by OECD staff place China's average growth at 4.6 percent and India's at 5.7 percent during 2014–35.) These rates of GDP growth for the two countries are somewhat more optimistic but not far from the Consensus Forecasts, which are significantly more optimistic than the OECD forecasts used in the baseline scenario.
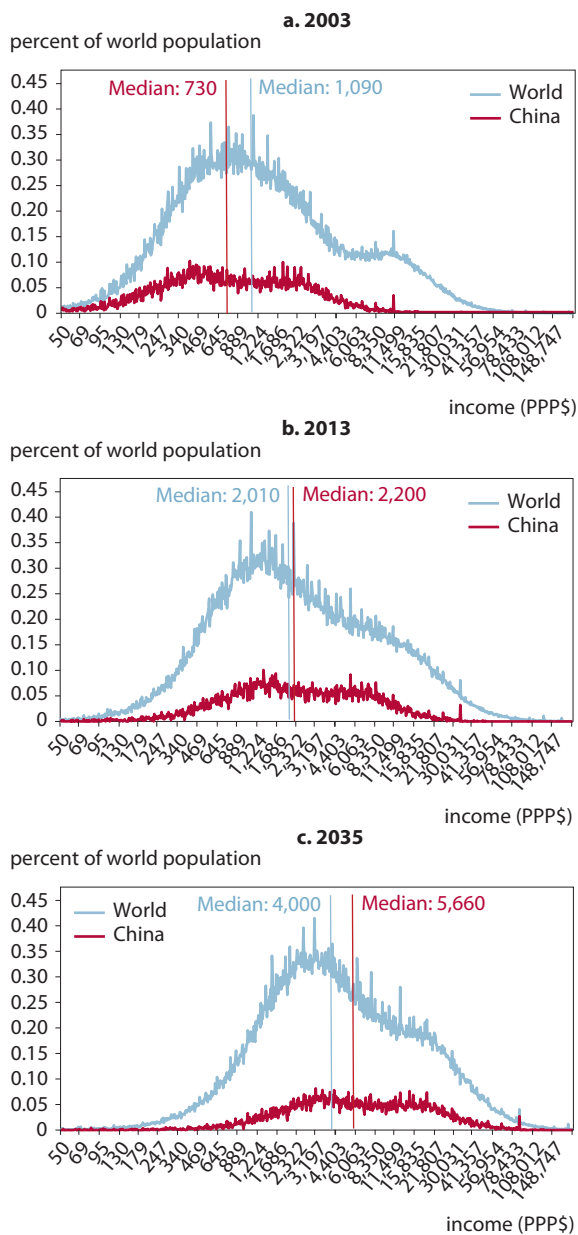
It turns out that whereas rapid growth in India would significantly reduce global inequality, continued robust growth in China over the next two decades would increase it. With only India growing at the more rapid pace, the global Gini coefficient would fall from 64.9 in 2013 to 62.2 in 2035. With rapid growth in both China and India, the global Gini coefficient would fall less, to 62.7, because China's growth would be from a much higher initial median income than India's (and higher than the worldwide median in 2013). Combined with China's relatively high level of inequality, high growth would lead to a significant rise in the share of the Chinese population that attained an advanced economy standard of living and pulled away from the bulk of the world's population living on low and medium incomes.

China's Evolving Contribution to Reducing Global Income Inequality

To better understand China's evolving contribution to reducing global income inequality, it is worth considering the frequency plots of the global distribution of individual incomes (the blue line in figure 5) and China's distribution (the red line). Individual incomes (plotted on the horizontal axis) are reported in logarithms, to improve legibility as well as to emphasize the bimodality of China's distribution, which results largely from the rural-urban gap. China's median individual income was below the world median in 2003. With growth above the world average, China's median income was already somewhat above the world median in 2013; China's relative advantage in this regard is projected to increase further by 2035.

China's above-world-average growth was one of the key factors underlying the reduction in global inequality during the past decade. In the next two decades, China's contribution in this regard will be relatively small, in all scenarios analyzed. It will be slightly positive or slightly negative depending on the complicated interactions between the growth differential between China and the world and the overlap between individual countries' income distributions. In the baseline scenario, China's rapid growth plays a small role in improving the worldwide income distribution. In the alternative scenario, in which China grows rapidly while other countries revert toward the worldwide mean growth rate (see below), the growth differential is sufficiently large that China's contribution slightly exacerbates global income inequality in 2035.

Figure 5   Individual income distribution

a. 2003

percent of world population

Median: 730   Median: 1,090
— World
— China

income (PPP$)

b. 2013

percent of world population

Median: 2,010   Median: 2,200
— World
— China

income (PPP$)

c. 2035

percent of world population

— World
— China
Median: 4,000   Median: 5,660

income (PPP$)

PPP$ = purchasing power parity dollars
Source: Authors' calculations.

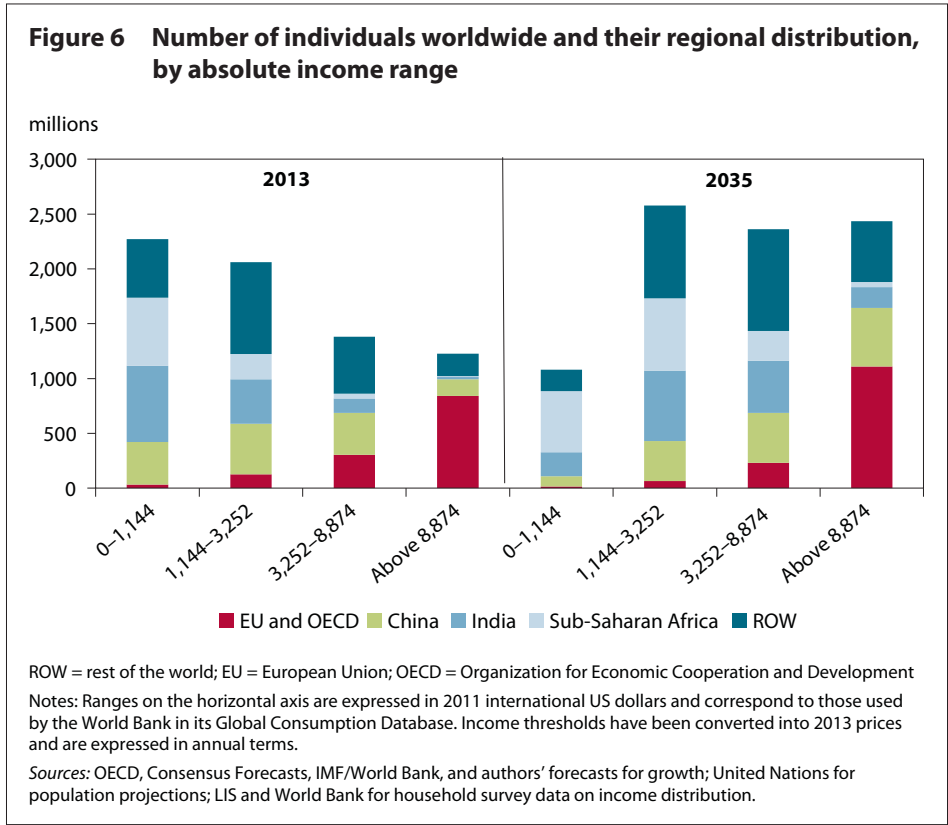## Additional Results for the Baseline Scenario: Individual Incomes by Income Bracket

This section provides detail on the projected global distribution of income in 2035 by groups defined in terms of absolute income ranges. As average per capita income and global population increase, more and more people will find themselves in higher income brackets (the bars on the right-hand side of figure 6 are larger in 2035 than in 2013).

The number of people in the lowest income bracket (the first bar) is projected to decline by almost 1.2 billion people in absolute terms: Despite population growth and its concentration in Sub-Saharan Africa, fewer people will have very low incomes in 2035 than in 2013. The number of people earning $1,144–$3,252 a year in PPP terms at 2013 prices will increase by about 500 million, with the largest gains in Sub-Saharan Africa and India. Most of the population growth in Sub-Saharan Africa will be concentrated in this income bracket over the next 20 years. The number of people earning $3,252–$8,874 a year will increase by almost 1 billion, with the largest gains in India and Sub-Saharan Africa but with large gains in Southeast and South Asia (included in the data for the rest of the world) as well. The number of people earning more than $8,874 a year will increase by 1.2 billion, with the largest gains in China and the advanced economies (the European Union and OECD) but with significant gains in India and in East Asia.

To the extent that consumption of certain goods is associated with particular income brackets, these developments will have major implications for consumption of goods at the global level. Spending on cars and other transportation goods and services, for example, is associated with incomes above $5,000 a year (Chamon, Mauro, and Okawa 2008). The shift in worldwide population above that threshold may result in greater pressures on public infrastructure and the environment, implying the need for policies to prepare for such changes.

Some Thoughts Regarding Implications for Chinese Firms

The results presented above point to a likely transformation of the consumer base in China and other countries, especially other developing and emerging economies. China's consumers are increasingly able to afford consumer goods traditionally associated with advanced economies. Other developing and emerging economic regions will experience a similar shift, providing opportunities for Chinese and other international businesses.

Figure 6   Number of individuals worldwide and their regional distribution, by absolute income range

millions

[Bar chart comparing 2013 and 2035 panels. X-axis income ranges: 0–1,144; 1,144–3,252; 3,252–8,874; Above 8,874. Y-axis from 0 to 3,000. Legend: EU and OECD, China, India, Sub-Saharan Africa, ROW.]

ROW = rest of the world; EU = European Union; OECD = Organization for Economic Cooperation and Development

Notes: Ranges on the horizontal axis are expressed in 2011 international US dollars and correspond to those used by the World Bank in its Global Consumption Database. Income thresholds have been converted into 2013 prices and are expressed in annual terms.

Sources: OECD, Consensus Forecasts, IMF/World Bank, and authors' forecasts for growth; United Nations for population projections; LIS and World Bank for household survey data on income distribution.

This study focuses on individual incomes with a view to exploring the implications for consumption worldwide. It is also important, however, to consider some key supply-side factors. In particular, UN demographic projections suggest that whereas China will begin to feel the impact of population aging in the next two decades and beyond, Sub-Saharan Africa will experience a demographic explosion.

Sub-Saharan Africa will account for 3.2 billion of the projected 4 billion increase in the global population by 2100; its working-age population will increase by 2.1 billion over the same period, compared with a net global increase of 2 billion (Drummond, Thakoor, and Yu 2014). Essentially all of the net global increase in the working-age population worldwide will thus come from Sub-Saharan Africa, with Africa's share of the global working-age population projected to increase from 12.6 percent in 2010 to more than 41.0 percent by 2100.

To date, China's focus in its trade and business relationship with Africa has been on natural resources (Brautigam 2010). Indeed, a significant share of China's involvement in infrastructure building in Africa has been in the context of development of the natural resource sector, a key input for Chinese manufacturing. As individual incomes increase and China's population ages, however, it is worth asking whether the abundant supply of young African workers over the next decades will represent an opportunity for Chinese and other businesses to increase foreign direct investment in Africa, in both the manufacturing and services sectors (Chamon and Kremer 2009).

CONCLUSION

Worldwide income inequality is projected to continue to decline over the next two decades. As a result, hundreds of millions of people will be lifted out of abject poverty; hundreds of millions will join the "working poor," who can afford basic consumer goods (with the largest net gain occurring in Sub-Saharan Africa); hundreds of millions will start using consumer durables such as refrigerators and cars (with the largest gain in

India); and hundreds of millions will reach absolute levels of consumption (at constant prices) associated with current median incomes in advanced economies (with the largest gain in China). These developments will create business opportunities, but they will also put pressures on the environment and pose challenges for policymakers, both domestically (such as the need for more infrastructure) and worldwide (such as the need to address global climate change).

The decline in global inequality will be less marked if the pace of economic growth slows in emerging markets and converges to the worldwide mean. But successful economic reforms and resulting growth in a few large low-income economies, particularly India, could generate significant reductions in global inequality. Rapid growth in China, while beneficial for the country's large population and the world economy, will no longer materially reduce global income inequality, because the median income in China has already overtaken the worldwide median.

China has appropriately devoted major resources to domestic investment in infrastructure over the past two or three decades; further investment will continue to be warranted by the projected increase in the number of its consumers who will be able to afford transportation services (cars, trains, planes) and consumer durables requiring significant energy consumption (refrigerators, other appliances) in the next two decades. The related challenges with respect to the environment and climate change are also worth analyzing in greater detail to inform public policy decisions in these areas.

With median individual incomes in China marginally higher than in the world as a whole, the demand for new infrastructure may be even more acute in other regions projected to grow rapidly from a lower per capita income level, such as India and Sub-Saharan Africa. Both the need for infrastructure and the growth of consumer markets in those regions represent potentially profitable opportunities for Chinese and other international businesses. Additional progress in international economic integration will thus facilitate mutually beneficial gains from trade.

REFERENCES

Atkinson, Anthony B., Thomas Piketty, and Emmanuel Saez. 2011. Top Incomes in the Long Run of History. *Journal of Economic Literature* (March): 3–71.

Brautigam, Deborah. 2010. *The Dragon's Gift: The Real Story of China in Africa*. Oxford: Oxford University Press.

Chamon, Marcos, and Michael Kremer. 2009. Economic Transformation, Population Growth and the Long Run. *Journal of International Economics* 79, no. 1: 20–30.

Chamon, Marcos, Paolo Mauro, and Yohei Okawa. 2008. Cars: Mass Car Ownership in the Emerging Market Giants. *Economic Policy* April: 243–96.

Chen, Shaohua, and Martin Ravallion. 2010. The Developing World Is Poorer than We Thought, but No Less Successful in the Fight against Poverty. *Quarterly Journal of Economics* 125, no. 4: 1577–625.

Dollar, David, Tatjana Kleineberg, and Aart Kraay. 2013. *Growth Still Is Good for the Poor*. Policy Research Working Paper 6568. Washington: World Bank.

Drummond, Paulo, Vimal Thakoor, and Shu Yu. 2014. *Africa Rising: Harnessing the Demographic Dividend*. Working Paper 14/143. Washington: International Monetary Fund

Hellebrandt, Tomáš, and Paolo Mauro. 2015. *The Future of Worldwide Income Distribution*. PIIE Working Paper 15-7. Washington: Peterson Institute for International Economics.

Ho, Giang, and Paolo Mauro. 2014. *Growth: Now and Forever?* IMF Working Paper 14/117. Washington: International Monetary Fund.

Lakner, Christoph, and Branko Milanović. 2013. *Global Income Distribution: From the Fall of the Berlin Wall to the Great Recession*. World Bank Working Paper 6719. Washington: World Bank.

Milanović, Branko. 2005. *Worlds Apart: Measuring International and Global Inequality*. Princeton, NJ: Princeton University Press.

Pritchett, Lant, and Lawrence H. Summers. 2014. *Asiaphoria Meets Regression to the Mean*. NBER Working Paper 20573. Cambridge, MA: National Bureau of Economic Research.

CHINA'S RISE AND AMERICAN WELFARE

ROBERT Z. LAWRENCE

The strong performance of China over the past decade—and forecasts that it could be sustained in the decades ahead—does not meet acclaim in all quarters, especially the United States. US international economic policy has traditionally presumed that foreign economic growth is in the United States' economic interest (as President John F. Kennedy once put it, "a rising tide lifts all boats"). When it comes to China's rise, however, many are not so certain.

The US public is worried primarily about jobs. When emerging economies grow rapidly by exporting more manufactured goods (China) and services (India), they provoke concerns that they are creating unemployment and reducing wages in the United States. Some prominent economists have stoked these fears. Nobel Laureate Paul Samuelson (2004) suggested that Chinese growth could reduce American welfare by lowering its gains from trade. Lawrence Summers (the former head of President Barack Obama's National Economic Council) argued that Chinese growth hurts the United States by raising world oil prices.

These concerns are consequential for all who seek effective global cooperation. If foreign growth does threaten US prosperity, the possibilities for such cooperation are in jeopardy. Although it could still be in the US interest to promote growth in developing countries for altruistic or national security reasons, such cooperation becomes much less attractive if it is viewed as coming at the expense of US economic welfare.

Lawrence Edwards and I studied this question in our book *Rising Tide: Is Growth in Emerging Economies Good for the United States?* (Edwards and Lawrence 2013). Our analysis suggests that some of these concerns are misplaced and that trade with emerging economies such as China has been blamed for many outcomes it did not cause. Many Americans believe imports and the US trade deficit are responsible for shrinking employment in manufacturing, for example. Trade has certainly played a role, but we find that rapid productivity growth and American spending choices are far more important.

Many people believe that trade with China will make Americans poorer because China has become a more formidable competitor. But we find that Chinese growth actually raises American living standards, because China is not (yet) competing head-to-head with most US exporting industries and it provides America with imports at relatively low prices. Many people think that rapid demand growth in emerging economies is the main reason for the rise in oil prices over the past decade, but we find that the failure by advanced economies to increase domestic production was the more important factor and that the United States has become more self-sufficient in oil and thus less vulnerable to higher oil prices.

ROBERT Z. LAWRENCE is senior fellow at the Peterson Institute for International Economics and the Albert L. William Professor of International Trade and Investment at the Harvard Kennedy School.

To be sure, trade presents challenges. Some imports from emerging economies have caused harm, as trade-related job losses hurt specific communities and impose heavy costs on displaced workers. In the long run, however, the benefits to America more than offset these costs. The correct response to these problems is thus not to raise trade barriers but to improve aid to workers who are displaced and equip them with the skills they need to compete.

This paper presents evidence that supports these conclusions. The first section considers whether the United States and China are competitive or complementary in their trade patterns. The second section considers the impact of Chinese imports on US employment. The third section looks at the impact of trade on wages and the costs of dislocation. The last section conducts an exercise that shows the high benefit-to-cost ratio of US trade with China.

IS US-CHINA TRADE COMPETITIVE OR COMPLEMENTARY?

Paul Samuelson (2004) famously argued that Chinese growth might not be favorable for the United States if China developed in a way that drove down US export prices and raised US import prices. Chinese growth has not had these effects over the past decade. The United States' terms of trade improved between 2004 and 2011, before deteriorating thereafter (figure 1).

An important issue is the degree to which the United States and China compete directly in export markets. To determine whether the products they export overlap, Edwards and Lawrence (2013) developed similarity indices that subtract the export shares of each product in the exports of each partner and then sum them. This methodology involves calculating the shares of each commodity, summing the absolute difference in these shares, dividing the result by 2, and subtracting that result from unity.

Figure 1 US terms of trade with China, January 2004–15

ratio of US nonagricultural export prices to US Chinese import prices

Source: US Bureau of Labor Statistics.

If X_i is the share of commodity i in imports from country X, and Y_i is the share of commodity i in imports from country Y, the absolute difference in the share of each commodity is

$$|X_i - Y_i|. \tag{1}$$

Dividing the sum of these differences by 2 and subtracting the resulting value from 1 provides a similarity index (SI_{XY}) between X and Y that equals 0 when the two series are completely different and 1 when they are completely similar.

$$SI_{XY} = 1 - \Sigma_i |X_i - Y_i| / 2. \tag{2}$$

We calculated the export similarity of each country reported with the exports of countries in the Organization for Economic Cooperation and Development (OECD) using data at the 10-digit Harmonized System

Table 1 Export similarity indices for manufactured goods

Economy	Export similarity with high-income OECD country exports to US, HS 10-digit data				Export similarity with US exports, 6-digit data			
	1990	2000	2006	Change 1990–2006	1990	2000	2006	Change 1990–2006
Vietnam	n.a.	0.03	0.08	n.a.	n.a.	0.04	0.07	n.a.
Hong Kong	0.22	0.19	0.18	–0.04	0.21	0.21	0.20	–0.01
India	0.08	0.13	0.18	0.10	0.09	0.15	0.21	0.12
Singapore	0.18	0.18	0.19	0.01	0.22	0.24	0.24	0.02
ASEAN-4	0.18	0.23	0.19	0.01	0.17	0.26	0.24	0.07
China	**0.15**	**0.25**	**0.25**	**0.10**	**0.11**	**0.24**	**0.26**	**0.15**
Taiwan	0.27	0.28	0.26	–0.01	0.27	0.33	0.31	0.04
Other developing countries	0.22	0.24	0.26	0.04	0.22	0.23	0.27	0.05
France	0.31	0.33	0.32	0.01	0.38	0.39	0.40	0.02
Mexico	0.33	0.41	0.39	0.06	0.30	0.37	0.37	0.07
United Kingdom	0.41	0.44	0.43	0.02	0.45	0.47	0.43	–0.02
Korea	0.28	0.34	0.44	0.16	0.23	0.30	0.34	0.11
Other developed countries	0.49	0.51	0.54	0.06	0.41	0.43	0.45	0.04
Japan	0.61	0.60	0.55	–0.06	0.42	0.46	0.40	–0.02
Germany	0.50	0.54	0.56	0.06	0.41	0.47	0.47	0.06
Canada	0.53	0.55	0.56	0.04	0.39	0.43	0.45	0.06

n.a. = not available; HS = Harmonized System; ASEAN = Association of Southeast Asian Nations; OECD = Organization for Economic Cooperation and Development

Note: A value of 0 implies no similarity; higher numbers imply greater similarity.

Source: Edwards and Lawrence (2013).

(HS) level. These calculations identify Vietnam as the country whose exports are most different from the advanced countries. Although China became more similar to developed countries between 1990 and 2006 (its index rose by 0.10), the composition of Chinese exports still remained very different from those countries'. The second panel of table 1 shows that at the six-digit level, the mix of exports by China and the United States was very different, with China's exports even more different from those of developed countries such as Japan, Germany, and Canada.

The data reveal the weak overlap in the export bundles of developing countries with the United States and other developed countries. Products that accounted for 50 percent of US imports from China in 2006 made up just 8 percent of US imports from high-income OECD countries and 11 percent of US exports. In contrast, these products accounted for 52 percent of US imports from the Association of Southeast Asian Nations (ASEAN)-4 (Indonesia, Malaysia, the Philippines, and Thailand); 37 percent from Vietnam; and less than 10 percent from India and "other" developing countries. These products made up 27 percent (Hong Kong) to 56 percent (Singapore) of US imports from selected high-income Asian economies, suggesting that the head-to-head competition is taking place between China and other countries within Asia rather than with other high-income economies, including the United States.

A similar story is evident if we look at products accounting for 80 percent of US imports from China. In 2006 they constituted just 21 percent of US imports from high-income OECD countries and 23 percent of US exports. In contrast, they accounted for 76 percent of US imports from ASEAN-4 and more than 47 percent of US imports from selected high-income Asian economies. By and large the goods the United States imports from China are thus very different from the goods it exports itself and imports from high-income countries

outside Asia. Most Chinese exports are thus not competing with the bulk of US or other developed-country exports; they are competing with the rest of Asia.

There has been some convergence in the composition of developed- and developing-country exports. But are developing countries producing the same products in the categories in which exports overlap? To answer this question, we turn to unit value data, which are obtained by dividing trade values in a category by a measure of quantity such as dozens or kilograms. If US exports or imports from developed countries are similar to exports from developing countries in quality, composition, and price, we would expect them to have similar unit values.

In fact, the unit values of US imports from developing countries are substantially lower than the unit values of equivalent products imported from high-income OECD countries and products exported by the United States. Furthermore, unlike the export similarity indices (which indicate rising across-product similarity in developing-country exports with US exports), unit value ratios reveal no such convergence. These results suggest that although developing countries are exporting more in categories in which developed countries also specialize, they are selling different and cheaper types of products.

There is an important qualification to this conclusion. Lall (2000) classifies products at the three-digit level of the Standard International Trade Classification (SITC) into primary products and resource-based, low-technology, medium-technology, and high-technology manufactures. High-income country exports to the United States are concentrated in medium- and high-technology manufactures, and there was little change in this structure over the full period 1990–2006.

Chinese exports to the United States behaved very differently. In 1990, 74 percent of US imports of manufactured goods from China consisted of low-technology products (mainly clothing) and only 7 percent of high-technology products. By 2006 high-technology products accounted for 35 percent of US imports of manufactured goods from China, with all of the increase attributable to electronic and electrical products. The share of high-technology products in US imports from other low- and middle-income countries also rose, but at a slower pace (from 18 to 25 percent).

The rising technology intensity of developing-country exports (especially China) to the United States raises concerns about head-to-head competition with the United States in products in which the United States has a comparative advantage. However, import values obscure a high degree of within-product specialization. We therefore reevaluated the apparent rise in sophistication of developing-country exports to the United States using unit value data.

Figure 2 presents the weighted-average unit value of US imports from China relative to the unit values of US exports of manufactured goods between 1990 and 2006. The relative

Figure 2   China's export prices relative to US exports, 1990–2006
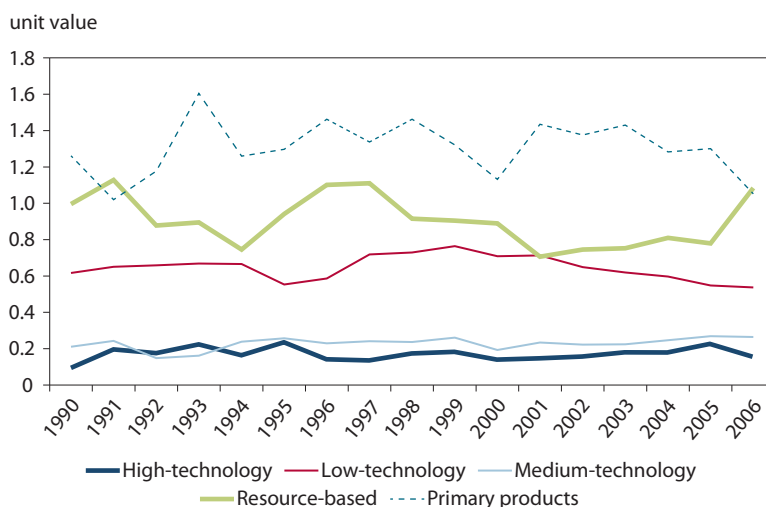
Note: Individual country averages are calculated using total US exports as weights. Weighted averages for regions are calculated by aggregating the country-level average using total bilateral import values as weights. The group "Primary products" reflects manufactures (NAICS 331–333) classified as primary products by Lall (2000).
Source: Edwards and Lawrence (2013).

prices of Chinese resource-based, low-technology, and primary manufactures ranged between 0.5 and 1.4. These relative price differences are to be expected: Resource-based and low-tech products tend to be relatively undifferentiated while medium- and high-technology products are different. The unit values of US imports from China of these more differentiated products were 15–30 percent of the equivalent products exported by the United States. Remarkably, there was no significant movement in these relative prices over the 16 years covered in the sample. The average level of relative prices of imports from all developing countries was slightly higher than the average for China alone, but there was also no change in the trend over time.

In sum, although the composition of exports of the United States and developing countries has become more similar over time, the two entities specialize in product categories that for the most part do not overlap. Even when exports are classified in the same category, there are large and systematic differences in unit values (average prices), which suggests that the products made by developed and developing countries are not very close substitutes (developed-country products are far more sophisticated).

This finding cannot be dismissed as simply the result of developing countries producing more intermediate products in each category (i.e., reflective of global supply chains); it holds as well in categories that include only finished goods. These differences in prices are not apparent for all types of products, however. Export prices of developed and developing countries of primary commodity–intensive products (e.g., steel and copper) are typically quite similar. Prices of standardized (low-tech) manufactured products (e.g., inexpensive clothing) exported by developed and developing countries are somewhat similar. In contrast, medium- and high-tech manufactured exports of developed and developing countries (e.g., vehicles, pharmaceuticals, and electronics) differ greatly. High-tech products are characterized by a greater scope for product differentiation, enabling US producers in these sectors to better insulate themselves from foreign competition from emerging-market exporters. Furthermore, as we demonstrate in our book, the average quality of developing-country exports is much lower than the quality of exports from high-income countries, particularly for high-tech products. The average prices of developing-country exports are low, and the quality of high-tech exports is also relatively low. Moreover, the average gap in quality between the exports of developing countries as a group and US exports has not narrowed over time.

The detailed analysis of trade composition and unit values confirms the aggregate behavior of the US terms of trade with China. It suggests that the concerns raised by Paul Samuelson do not apply to US trade with China over the period studied.

It is, of course, possible that the terms of trade trend could change. It is also likely that as developing countries grow, they will move into the production of more sophisticated products and that as wages rise in China, the country's most labor-intensive manufactured exports will become more expensive. Given the fact that per capita incomes of China and India are still far below those of the United States, these developments are likely to reach significant magnitudes only several decades from now, however. If one assumes, for example, that the United States grows at 2.7 percent a year between 2010 and 2030 while annual growth in China and India averages 6.7 and 7.4 percent, respectively, China and India would reach 60 and 26 percent, respectively, of US per capita incomes on a purchasing power parity basis only by 2030.

As large developing countries converge more closely to developed-country per capita levels, the mix of goods and services they export could shift to more closely resemble the exports of today's industrial countries in both composition and sophistication. Some changes of this nature are already apparent, especially in leading emerging economies such as Korea and Taiwan. However, if experience is similar to the earlier convergence of Europe and Japan to US per capita income levels, the challenges are likely to occur on a sizable scale only far in the future.

Moreover, this convergence in income levels will give rise to two countervailing forces. On the one hand, it could, as Samuelson has argued, reduce the United States' gains from trade by raising import costs and pro-

viding more competition for US exporters. On the other hand, convergence could lead to more intraindustry trade of the kind that is typical between countries at similar income levels. Such trade would generate more gains from trade for the United States by increasing product variety by creating more opportunities to exploit economies of scale. In principle, the net impact of the two effects could go in either direction.

LOST JOBS: WHAT ROLE DO US IMPORTS FROM CHINA PLAY IN THE DISLOCATION OF US WORKERS?

While economists have focused on welfare, the US public has focused on jobs.[1] Over the past decade, US imports from China grew rapidly at a time when US employment in manufacturing fell dramatically and the United States experienced two recessions. It is not easy, however, to translate import volumes into estimates of the impacts of the aggregate adjustment costs imposed on individual workers. An upper-bound estimate of displacement can be obtained by assuming that (a) every dollar Americans spend on Chinese imports substitutes for a dollar they would otherwise have spent on similar products made in the United States and (b) the labor that produced that US output is laid off. Such an approach assumes that no adjustment occurs through voluntary attrition and that there is no additional demand for imports (i.e., that the level of spending remains constant).

One way to estimate this upper bound is to use an input-output table that indicates for each dollar of final demand the employment that is required from every US industry. Because most Chinese imports are manufactured products and the manufacturing sector has been a focus of particular concern, I start by considering US manufacturing employment. The

Table 2   US employment equivalence of US manufacturing imports from China, 2000–2012

					Annual change over	
	2000	2007	2010	2012	2000–2007	2007–12
Manufacturing imports from China (billions of US dollars)	97.09	315.13	356.08	450.03	218.04	93.95
US employment equivalence (millions)[a]						
Manufacturing jobs	0.7	2.02	2.01	2.10	0.189	0.018
Total jobs	1.29	3.03	2.90	3.35	0.249	0.090

a. Estimated using input-output tables.

Sources: US International Trade Commission Data Web; Bureau of Labor Statistics, www.bls.gov/emp/ep_data_input_output_matrix.htm; and Lawrence (2014).

Bureau of Labor Statistics' input-output tables for total employment requirements show that in 2000, replacing manufactured imports from China with equivalent values of domestically produced goods would have required 695,000 US manufacturing jobs (table 2). A similar calculation for 2007 indicates that replacement of manufactured imports would have required 2.02 million manufacturing jobs.[2] These estimates suggests that between 2000 and 2007, the US manufacturing labor content equivalent of the growth of Chinese imports averaged an increase of 188,000 manufacturing jobs a year.[3]

US imports of manufactured goods from China continued to increase after 2007, rising from $315 billion to $356 billion in 2010 and $450 billion in 2012. But the growth in output per worker in the United States

1. This section draws heavily on Lawrence (2014).
2. Between 2000 and 2007, value added per full-time employee in US manufacturing increased from $816,000 to $1.223 million. As a result, although the value of imports from China tripled, the employment equivalence increased only 109 percent.
3. Scott (2010) undertakes a similar analysis, obtaining somewhat larger job content estimates. Whereas my approach assumes that had domestic products been more expensive Americans would have purchased smaller volumes of them, his approach implicitly assumes inelastic demand. He estimates that between 2000 and 2010, the average increase in Chinese manufacturing jobs content was 200,000 a year. "Between 2001 and 2011, the trade deficit with China eliminated or displaced more than 2.7 million US jobs, over 2.1 million of which (76.9 percent) were in manufacturing," he concludes.

implies that despite the 43 percent rise in imports from China between 2007 and 2012, the manufacturing employment content of these imports was just 90,000 higher in 2012 than in 2007.

This example illustrates the powerful role that increased productivity growth has played in reducing employment growth in US manufacturing. Between 2000 and 2012, increased productivity caused average annual job losses of 116,000 jobs. Over the same period, according to input-output analysis, employment equivalence outside manufacturing rose by 55,000 jobs, for a total annual average of 192,000 manufacturing and non-manufacturing jobs a year.

Demand versus Supply

This use of ex post data to infer impacts on actual changes in US employment is problematic, because it estimates the job content of all import growth and fails to distinguish the reason why imports increased, in particular whether demand or supply shifted. When Americans increase their spending, sales of both domestic and imported products increase. Both imports and domestic employment could increase. If, however, imports increase because the foreign supply curve shifts outward and import growth reflects an increase in the foreign share of a given level of domestic spending, domestic employment opportunities would be lost. In the case of an expansion in US demand, job opportunities might be reduced in the hypothetical sense that Americans might have purchased more domestic products had imports not existed. If concerns relate to dislocation, however, it is preferable to produce estimates in which causation is explicitly accounted for and supply and demand shocks distinguished.

The recent work of Acemoglu et al. (2014) on Chinese imports is especially helpful in this regard. It isolates the employment impacts that can be ascribed to supply rather than demand shifts, using Chinese exports to third countries to capture import growth that reflects Chinese productivity growth rather than an increase in US demand. Using input-output analysis, the authors supplement this direct impact on specific industries with estimates of additional effects on downstream industries (which lose inputs) and upstream industries (which lose customers). Their analysis leads them to conclude that 985,000 jobs in manufacturing were lost as a result of both direct and downstream effects between 1999 and 2011; they estimate job losses between 1999 and 2007 at 1.054 million. The estimates for 1999–2011 imply losses of 82,000 a year —about 30 percent less than the input-out estimates of 116,000 lost jobs obtained through the input-output analysis reported in table 1.[4]

US employment in manufacturing declined 5.4 million between 1999 and 2011. This figure suggests that if the United States had replaced its Chinese imports with local production, the decline in manufacturing employment would have been 18 percent less than it was. Declining employment in manufacturing would thus have been similar (if somewhat smaller) without Chinese import growth.

Acemoglu et al. do obtain somewhat higher estimates than I do for nonmanufacturing employment—another 994,000 (or another 82,000 per year). Their estimate of total annual employment loss of 164,000 is similar to my total annual estimate of jobs lost (171,000) using input-out tables.

Voluntary and Involuntary Separations

The distinction between employment opportunities and the actual experience of job loss is also important. The estimates obtained by Acemoglu et al. do not reveal precisely how many workers may have experienced involuntary unemployment. Some reductions in manufacturing employment were achieved through volun-

---

4. Acemoglu et al. (2014) also estimate additional multiplier effects on commuting zone employment, which are somewhat larger than their estimates on overall employment. These effects could be offset by employment elsewhere in an economy at close to full employment.

tary attrition and the suppression of additional hiring or new plant births that might otherwise have taken place, as Pierce and Schott (2012) emphasize. The Job Opening and Labor Turnover Survey (JOLTS) conducted quarterly by the Department of Labor suggests that in the overall economy, voluntary separations (quits, retirements, and deaths) typically account for a large share of job separations. These estimates are sensitive to demand conditions. For example, during the recession years of 2001 and 2009, voluntary separations in manufacturing accounted for 48 percent and 31 percent, respectively, of all separations. In contrast, during the expansion years of 2005 and 2006, the figure was much higher (averaging 61 percent). A conservative estimate for the share of separations that may have been voluntary would be the lowest annual average for manufacturing over the past decade (31 percent). Using the figures of Acemoglu et al. would imply total job losses of 1.365 million between 1999 and 2011 (114,000 a year), of which about half were in manufacturing.

What share of overall US displacement did Chinese trade account for? One benchmark is the Displaced Worker Survey, compiled by the Bureau of Labor Statistics using US household data. This survey focuses on workers who lost permanent jobs for reasons beyond their control (such as plant closings and insufficient demand.) These surveys indicate that on average 688,000 manufacturing workers a year were displaced between 2001 and 2007, roughly a fifth of all workers displaced. Applying an adjustment factor of 30 percent for voluntary attrition implies adjusted input-output estimates of manufacturing losses of 133,500 a year between 2000 and 07. These estimates suggest that Chinese trade was responsible for about 19 percent of manufacturing worker displacement over this period.

Beyond Manufacturing

Substantial displacement occurs outside the manufacturing sector. Between 2001 and 2007, the average annual number of displaced workers in the displaced worker survey was 2.87 million. The input-output estimates in table 2 indicate that the overall US employment equivalence of the increase in Chinese imports between 2000 and 2007 of 249,000 a year was 31 percent larger than the equivalence of the increase of 189,000 a year in manufacturing employment alone. This estimate implies that Chinese trade displaced 127,000 US workers a year, about 4.4 percent of total annual displacements (1.31 x 97,000) during this period. Although 4.4 percent is a significant number, this estimate reveals that the overwhelming share of job displacement in the United States has not been caused by Chinese trade.

Acemoglu et al. (2014) obtain larger estimates of employment losses outside US manufacturing. They provide estimates for two periods. Between 2000 and 2007 they estimate an additional loss of 994,000 non-manufacturing jobs in 1999–2011 and total job losses of 2.024 million in 1999–2007. Their estimates for the total annual number of jobs lost are 166,000 in 1999–2011 and 253,000 in 1999–2007. The latter number is 10 percent of the total number of workers displaced annually between 2001 and 2007.

If, however, one assumes that 30 percent of the declines caused by trade were achieved through voluntary attrition, their estimate falls to just 7 percent of all dislocated workers in the United States between 2000 and 2007. As their estimates of job loss between 2000 and 2011 are similar to those for 2000–07, the share of overall US worker displacement over this longer period caused by Chinese trade would be much less than 10 percent, even before correcting for voluntary attrition.

THE IMPACT OF CHINESE IMPORTS ON WAGES AND COSTS OF ADJUSTMENT

When considering the wage effects of Chinese trade, it is important to distinguish between the part of wages that reflect general returns (i.e., payments for attributes that are valued regardless of the job, such as a college versus a high-school education), and the part of wages that represents payments for specific skills, which can be realized only in particular jobs or occupations. If workers at various skill levels and capital were homog-

enous and fully mobile, trade with China could affect wages at different skill levels and the returns to capital with general attributes regardless of the industry or location in which they are employed. In principle, then, increased trade with China could depress the relative wages of unskilled workers relative to skilled workers across the US economy as well as the returns to labor relative to the returns to capital in all industries. If, in contrast, wages mainly reflect returns that are specific to particular jobs, firms, and occupations, most of the effects would be borne by workers directly affected by Chinese competition.

If workers are fully mobile and their skills sets entirely general, displaced workers would obtain new jobs at the wages they previously earned, and the costs of job loss would be incurred only during unemployment. In contrast, if earnings are the result of specific returns, workers could also experience substantial and more permanent reductions in earnings even after finding new jobs.

Trade economists have applied models emphasizing either general or specific returns to factors of production. Much of the early work on the effects of trade on wages examined the role of trade in changing the returns to skilled and unskilled workers throughout the US economy (i.e., the impact on wage inequality). These studies used models that assumed that workers are perfectly substitutable and mobile. Studies conducted in the 1980s and 1990s based on these approaches suggested that trade was responsible for 10–20 percent of the increase in wage inequality (Cline 1997). More recent studies applying these methodologies to data since 2000 do not find large impacts on economy-wide skill differentials that could be attributed to either imports in general or Chinese imports in particular (for a survey, see Edwards and Lawrence 2013).

Recent studies also consider the effect of trade on specific wages at the level of firms, occupations, regions, and industries (for a survey, see Harrison, McLaren, and McMillan 2010). Although the evidence of a wage-loss impact on other workers, especially workers who are unskilled and work in the same industry or location as workers who are displaced by imports, is mixed, these studies find that losses are borne mostly by the workers who are actually displaced.[5]

Research on the impact of trade confirms that human capital is partly specific to industries and occupations (see, in particular, Jacobson, LaLonde, and Sullivan 1993 and Kambourov and Manovskii 2009), implying that human capital is destroyed by industry and occupation switching induced by import competition. Workers displaced by such developments often experience permanent losses; some never return to the labor force or are forced to accept new jobs at lower wages.

Farber (2005) examines displacement from manufacturing in general and from import-competing industries in particular. He reports that about two-thirds of displaced workers find new full-time jobs, but they do so at an average wage loss of 13 percent (17 percent including forgone wage growth during the unemployment transition). This average disguises a range of experiences: 36 percent gained reemployment at or above previous earnings, whereas 25 percent suffered earnings losses of 30 percent or more.

Workers displaced in mass layoffs appear to experience especially large wage losses. Davis and von Wachter (2011) conclude that in present value terms, men lose an average of 1.4 years of predisplacement earnings if displaced in a mass layoff that occurs when the national unemployment rate is below 6 percent. They lose a staggering 2.8 years of predisplacement earnings if displaced when the unemployment rate exceeds 8 percent. (These results reflect discounting of earnings at a 5 percent annual rate over 20 years after displacement.)

---

5. Ebenstein, Harrison, and McMillan (2015) find no impact of imports on industry wages but some effects on occupational wages, most of which are offset by gains to the people who employ workers in the affected occupations.

WELFARE AND COST-BENEFIT RATIOS

Arkolakis et al. (2008) develop a common estimator of the gains from trade that holds under a variety of trade models. Their basic estimator, which measures the percentage change in real income necessary to compensate a representative consumer for moving to autarky is $\delta^{1/\varepsilon} - 1$, where δ is the share of expenditure on domestic goods and ε is the elasticity of imports with respect to variable trade costs.

The problem in calculating this value is that the import data do not distinguish between goods for final consumption and goods used as intermediate inputs in production. Arkolakis, Costinot, and Rodriguez-Clare (2010) present two variants of the basic gains from trade indicators that are more suitable for the analysis here. In a world of tradable intermediate inputs, the estimator of the gains from trade becomes $\delta^{1/\beta\varepsilon} - 1$, where β is the share of nontradable inputs (e.g., factors) in the production of goods. Arkolakis, Costinot, and Rodriguez-Clare (2010) argue that β is on average equal to 0.5. Including tariff revenue, the estimator becomes $\delta^{1/\beta\varepsilon}(1 + T) - 1$, where T is the share of tariff revenues in the initial equilibrium.

Edwards and Lawrence (2013) use this version of the estimator to decompose overall US gains from manufacturing trade into country components. The implicit assumption is that reductions in each country's share of US expenditure are fully offset by an increase in domestic production (and not by imports from other countries). The estimates, based on a trade cost elasticity of –5, show overall gains from US trade in manufactures of 1.2–2.6 percent of real income, depending on the assumptions regarding the elasticity of imports with respect to trade costs and whether or not intermediate inputs are accounted for. The gains from trade rose by 2.3–2.6 percent between 1998 and 2008, before falling 2.2 percent during the recession, as import values fell. Some important variations at the country level reflect the changing geographical composition of US imports. The gains from trade with emerging and developing economies rose steadily throughout the period and were larger than the gains from trade with advanced economies. In fact, the gains from trade in manufactured goods with advanced countries fell.

The dominant source of these trends is China. Imports of manufactured goods from China raised real incomes by 0.2 percent in 1998. By 2008 this figure had tripled to 0.6 percent, or 25 percent of the overall gains from trade in manufactured goods. Given US national income in 2008 of $12.61 trillion, overall gains from manufactured goods trade were $337.8 billion, or about $1,000 per person in the United States. The gains from Chinese imports were $75.6 billion, or about $249 per person. The gains from trade with emerging economies overall were twice this figure.

Acemoglu et al. (2014) estimate employment loss from trade with China of about 2 million workers between 1999 and 2011, an average of 166,000 jobs a year. On average over this period, US compensation per full-time equivalent employee was $62,000, measured in 2009 dollars. Assuming, following Davis and von Wachter (2011), that the full displacement costs for these workers was about 1.4 times their annual compensation (the costs they estimate are for displaced workers when the unemployment rate is less than 6 percent), this figure suggests annual costs per displaced worker of $86,800, measured in 2009 dollars. Average annual displacement costs for the decade were about $14.4 billion.

These estimates assume that all "job losses" occurred through involuntary displacement. They therefore represent an upper-bound estimate of costs. Assuming which 30 percent of the adjustment takes place through voluntary attribution and suppression of new jobs reduces the adjustment costs to $10 billion year.[6]

Using the methodology described in Edwards and Lawrence (2013) and assuming that benefits reflect changes in the ratio of US imports from China to US national income yields average benefits from Chinese im-

---

6. I assume that costs of job loss and the ratio of Chinese imports to national income rise proportionately between 2000 and 2011 and therefore do not discount either the costs or benefits over that period. In later years, I discount the benefits.

Table 3   US cost-benefit ratio of US-China trade, 1999–2011

Cost and benefits	Dollars and ratios
Benefits (in 2009 dollars)	
2008 benefits (from Edwards and Lawrence 2013)	75.60
Average annual benefit, 2000–2011, using ratio of Chinese imports to national income	61.61
Benefits, 1999–2011	739.32
Additional discounted benefits (billions), 2.5% growth rate and 5% discount rate	
2012–22	940.9
2023–33	674.0
2034–45	440.9
Costs	
Average job loss (Acemoglu et al. estimates adjusted for voluntary attrition)	116,200
Cost per worker in dollars (1.4 times average annual compensation)	86,800
Average annual cost (billions of dollars)	10.09
Total cost (1999–2011)	121.03
Benefit-cost ratio	
1999–2011	6
1999–2022	14
1999–2033	19
1999–2045	23

Source: Methodology from Edwards and Lawrence (2013); author's calculations.

ports of $61.6 billion a year (in 2009 dollars) between 1999 and 2011 (table 3). This figure implies a benefit-cost ratio of 6.2 (4.3 if no adjustment is made for voluntary attrition).

These benefits and costs occur during the period of adjustment. In 2011 US benefits from China were equal to $85.33 billion. I assume that China will continue to export these products and that the benefits will grow roughly in line with US real incomes (at an annual rate of 2.5 percent). At a discount rate of 5 percent, the cost-benefit ratio is 14 times the initial costs through 2022, 19 times these costs through 2033, and 23 times these costs through 2045. Thus although there is a positive cost-benefit ratio during the adjustment period, gains from adjusting to trade build over time, as the benefit-cost ratio becomes increasingly positive over the long run. To be sure, China could change its export mix. But as long as other countries replace these exports, the benefits of having adjusted will continue to accrue to the United States.

In a similar exercise (Lawrence 2014), I use the estimates of Petri, Plummer, and Zhai (2014) to calculate the additional benefits from a US-China free trade agreement. I adjust the input-output numbers for both demand and attrition and use my own estimates of nonmanufacturing jobs lost. I conclude that after 10 years, such an agreement would provide a benefit-cost ratio 12 times greater than the costs of displacement of workers in the last year.

In sum, China and the United States are complementary in their trade patterns. As long as this relationship continues and US imports from China increase as the US economy grows, the benefits to the United States of having undergone the painful adjustment to Chinese imports will grow over time.

REFERENCES

Acemoglu, Daron, David H. Autor, David Dorn, Gordon H. Hanson, and Brendan Price. 2014. *Import Competition and the Great U.S. Employment Sag of the 2000s.* NBER Working Paper 20395. Cambridge, MA: National Bureau of Economic Research.

Arkolakis, Costas, Svetlana Demidova, Peter J. Klenow, and Andres Rodríguez-Clare. 2008. Endogenous Variety and the Gains from Trade. *American Economic Review, Papers and Proceedings* 98, no. 4: 444–50.

Arkolakis, Konstantinos, Arnaud Costinot, and Andres Rodriguez-Clare. 2010. New Trade Models, Same Old Gains? *American Economic Review* 102, no. 1: 94–130.

Cline, William. 1997. *Trade and Income Distribution.* Washington: Peterson Institute for International Economics.

Davis, Steven J., and Till von Wachter. 2011. *Recessions and the Costs of Job Loss.* Brookings Papers on Economic Activity 43, no. 2: 1–72. Washington: Brookings Institution.

Ebenstein Avraham, Ann Harrison, and Margaret McMillan. 2015. *Why Are American Workers Getting Poorer? China, Trade and Offshoring.* NBER Working Paper 21027. Cambridge, MA: National Bureau of Economic Research.

Edwards, Lawrence, and Robert Z. Lawrence. 2013. *Rising Tide: Is Growth in Emerging Economies Good for the United States?* Washington: Peterson Institute for International Economics.

Farber, Henry S. 2005. *What Do We Know about Job Loss in the United States? Evidence from the Displaced Workers Survey, 1984–2004.* Princeton University Industrial Relations Section Working Paper 498. Princeton, NJ: Princeton University.

Harrison, Anne E., John McLaren, and Margaret S. McMillan. 2010. *Recent Findings on Trade and Inequality.* NBER Working Paper 16425. Cambridge, MA: National Bureau of Economic Research.

Jacobson, Louis S., Robert J. LaLonde, and Daniel G. Sullivan. 1993. Earnings Losses of Displaced Workers. *American Economic Review* 83, no. 4: 685–709.

Kambourov Gueorgui, and Iourii Manovskii. 2009. Occupational Mobility and Wage Inequality. *Review of Economic Studies* 76, no. 2: 731–59.

Lall, Sanjaya. 2000. *The Technological Structure and Performance of Developing Country Exports.* QEH Working Paper 44. Queen Elizabeth House, Oxford University.

Lawrence, Robert Z. 2014. Adjustment Challenges for US Workers. In *Bridging the Pacific: Toward Free Trade and Investment between China and the United States*, ed. C. Fred Bergsten, Gary Clyde Hufbauer, and Sean Miner. Washington: Peterson Institute for International Economics.

Petri, Peter A., Michael G. Plummer, and Fan Zhai. 2014. The Effects of a China—US Free Trade and Investment Agreement. In *Bridging the Pacific: Toward Free Trade and Investment between China and the United States*, by C. Fred Bergsten, Gary Clyde Hufbauer, and Sean Miner. Washington: Peterson Institute for International Economics.

Pierce, Justin R., and Peter K. Schott. 2012. *The Surprisingly Swift Decline of U.S. Manufacturing Employment.* NBER Working Paper 18655. Cambridge, MA: National Bureau of Economic Research.

Samuelson, Paul A. 2004. Where Ricardo and Mill Rebut and Confirm Arguments of Mainstream Economists Supporting Globalization. *Journal of Economic Perspectives* 18, no. 3: 135–46.

Scott, Robert E. 2010. *Rising China Trade Deficit Will Cost One-Half Million U.S. Jobs in 2010.* Economic Policy Institute Issue Brief 283. Washington: Economic Policy Institute.

MOVING AWAY FROM BANKS: COMPARING CHALLENGES IN CHINA AND THE EUROPEAN UNION

SILVIA MERLER AND NICOLAS VÉRON

The United States is the natural reference point in debates on financial reform in Europe and China, as it is elsewhere around the world. The US financial system is the world's largest and most diverse and many of its innovations have shaped modern finance. But it is also an outlier given its unique reliance on capital markets, the origins of which can be traced to the very origins of the nation.

This paper suggests the European Union as a complementary point of reference for China's financial reformers. In turn, EU policymakers can learn useful lessons from China's experience of financial reform. Both China and the European Union are large, continent-sized economies with complex historical legacies. The European Union has a highly developed financial system, which includes one of the world's two leading international financial centers, the City of London. Like China, and unlike the United States, the European Union's financial system is predominantly based on banks as the key channel of financial intermediation and has long experience in financial repression and other forms of interaction and interdependence between the banking sector and government policy. The global financial crisis, which started in 2007, is transforming the EU financial system, and at least in continental Europe, is still in a process of resolution, while China has transformed its financial system beyond recognition in the past 30 years and is currently undergoing financial turbulence of its own.[1]

In both the European Union and China, albeit under very different circumstances, authorities have expressed an ambition to steer the national financial systems away from excessive reliance on banks and toward more market-based development. The Third Plenum of the 18th Congress of the Communist Party of China (CPC) in November 2013 referred to "the decisive function that the market has in allocating resources,"[2] which implies, among many other things, a drive toward a more market-based financial system. Never since the start of China's "reform and opening up" in 1978 had such strong pro-market rhetoric been used. In the European Union, Jean-Claude Juncker, then president-elect of the European Commission, announced in July 2014 the launch of a "capital markets union," which should "help reduce our very high dependence on bank funding."[3] Thus, both China and the European Union now aim at moving away from the dominance of banks and toward more diverse financial systems that would be both more efficient and more resilient.

The paper first summarizes recent developments in corporate finance in the two economies, then delves into policy reform initiatives taken by both jurisdictions, and concludes with prospects for further structural development and cross-learning between the two.

SILVIA MERLER is affiliate fellow at Bruegel. NICOLAS VÉRON is visiting fellow at the Peterson Institute for International Economics and senior fellow at Bruegel.

1. Kumiko Okazaki (2007) gives a comprehensive account of this transformation since the late 1970s. A more recent attempt is in Elliott and Yan (2013).
2. Communiqué of the Third Plenum of the 18th Party Congress, Communist Party of China, November 2013.
3. Jean-Claude Juncker, New Start for Europe: Political Guidelines for the next European Commission, opening statement at the European Parliament Plenary Session, July 15, 2013.

## CORPORATE FINANCE IN EUROPE: IMPACT OF CRISIS SINCE 2007

The funding structure of the corporate sector varies significantly across jurisdictions (figure 1). In the European Union, and even more so in the euro area, companies rely heavily on bank lending, more than in most advanced economies and even many emerging-market ones. Total loans accounted for 89 and 80 percent of nonfinancial corporate funding, respectively, in the euro area and the European Union in 2014Q3, compared with 29 percent in the United States and 83 percent in Japan in the same quarter and 80 percent in China in 2012 (latest available data).

This overreliance on bank lending proved to be a vulnerability during the financial crisis, which began in Europe in mid-2007 and was exacerbated by sovereign credit issues in the euro area starting in late 2009. The marked divergence of sovereign yields resulted in financial fragmentation and segmentation of risks along national borders inside the euro area. Banks located in weaker countries found it increasingly difficult to refinance on the market. As a consequence of the banks experiencing increasingly differentiated conditions for their wholesale funding depending on their country of headquarters, retail lending and deposit rates also started to diverge across euro area countries. The divergence in the price of credit to the private sector was also associated with negative growth of bank loan volumes, as illustrated in figures 2 and 3.

Companies in the most distressed countries of the euro area therefore found it increasingly difficult to access the external financing that they were previously obtaining from banks, while at the same time no alternative source of credit was readily available. Figure 4 shows the evolution of nonfinancial corporations' external financing (defined as total liabilities) and internal financing (defined as gross savings), both before and during the crisis. Total external financing in the euro area has been the lowest since 2001, whereas the amount of savings has increased over the same period (ECB 2013).

Before the crisis, nonfinancial corporations in many euro area countries, notably Spain and Portugal, relied heavily on external financing. During the crisis, external financing declined almost everywhere, but more significantly in southern Europe. In particular in Spain, firms even redeemed (in net terms) their external financ-
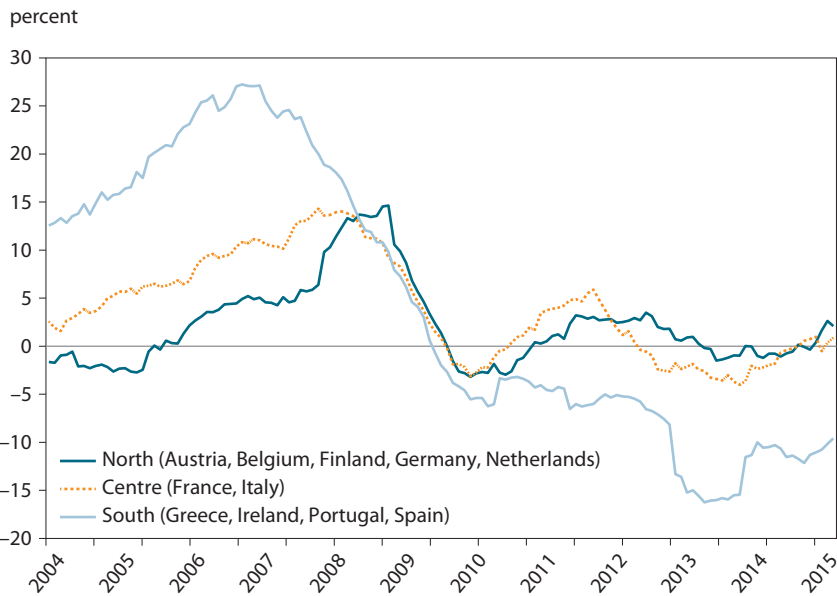
Figure 1   External financing of nonfinancial corporations, selected jurisdictions

percent
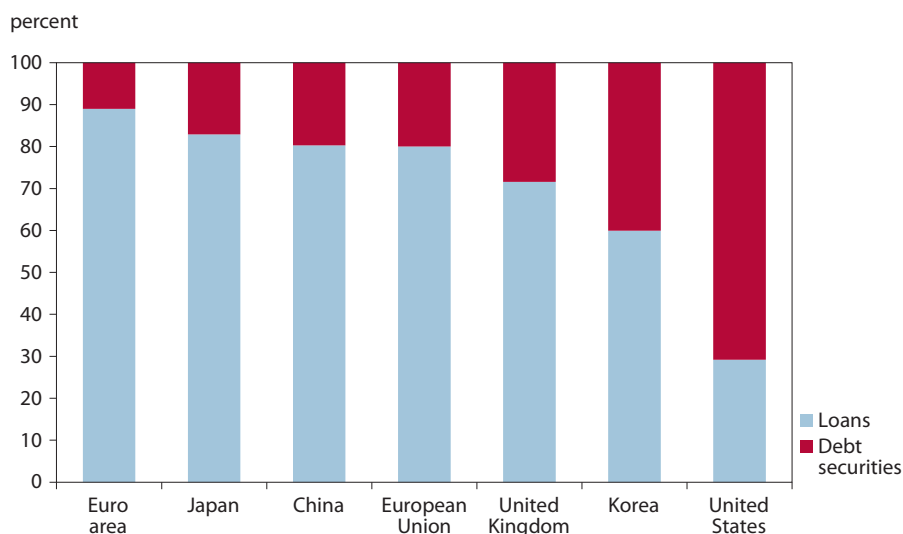
Note: The sector considered is defined as nonfinancial corporations (NFCs) in the European Union, euro area, Japan, and China; private nonfinancial corporations in Korea and the United Kingdom; and nonfinancial corporate business in the United States. Loans are defined as total loans on the liability side of NFCs' balance sheet. Ideally it would be better to isolate the banking component within total loans, but unfortunately that is not possible for all countries in the figure and so total loans are used for comparison. Debt is defined as "debt securities" for the United States; "securities other than shares" for the euro area, European Union, United Kingdom, Korea, and Japan; and "corporate bonds" for China. Data shown are for 2014Q3 for all countries, except China, where 2012 was the latest available year.
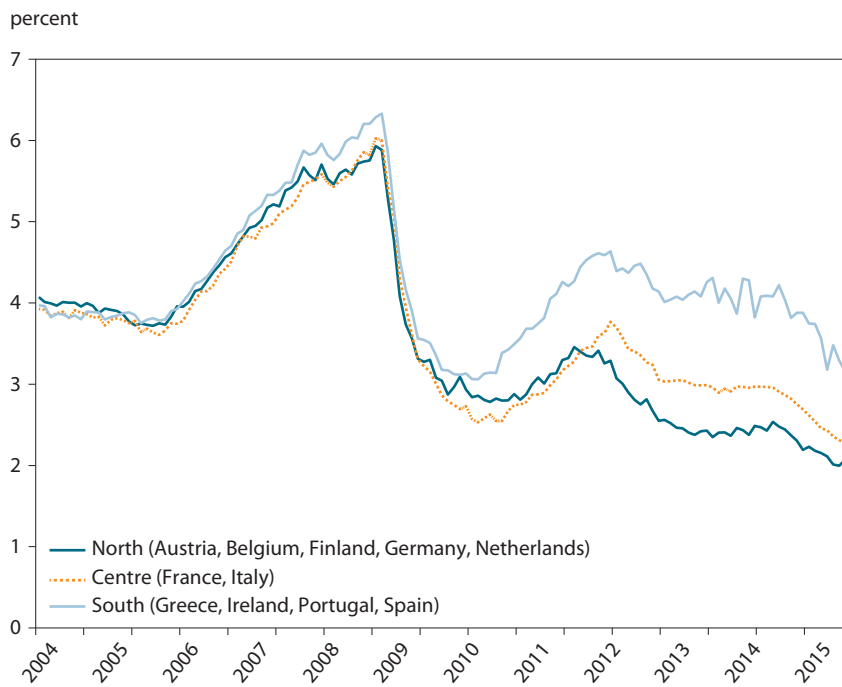
Source: Data for the euro area and EU countries are from Eurostat's financial accounts; data for the United Kingdom are from the Office of National Statistics' UK Economic accounts; data for the United States are from the US Federal Reserve's flow of funds; data for Japan are from the Bank of Japan's flow of funds statistics; data for Korea are from the Bank of Korea's flow of funds statistics; data for China are from flow of funds accounts reported in the *China Statistical Yearbook* (2014, with data for 2012).

Figure 2   Annual growth of bank loans to nonfinancial corporations in the euro area, 2004–15

percent

— North (Austria, Belgium, Finland, Germany, Netherlands)
···· Centre (France, Italy)
— South (Greece, Ireland, Portugal, Spain)

Source: Authors' calculations on data from the European Central Bank and Eurostat, updated from Darvas et al. (2015).

**Figure 3   Interest rates on bank loans to nonfinancial corporations in euro area, 2004–15**

percent

— North (Austria, Belgium, Finland, Germany, Netherlands)
···· Centre (France, Italy)
— South (Greece, Ireland, Portugal, Spain)

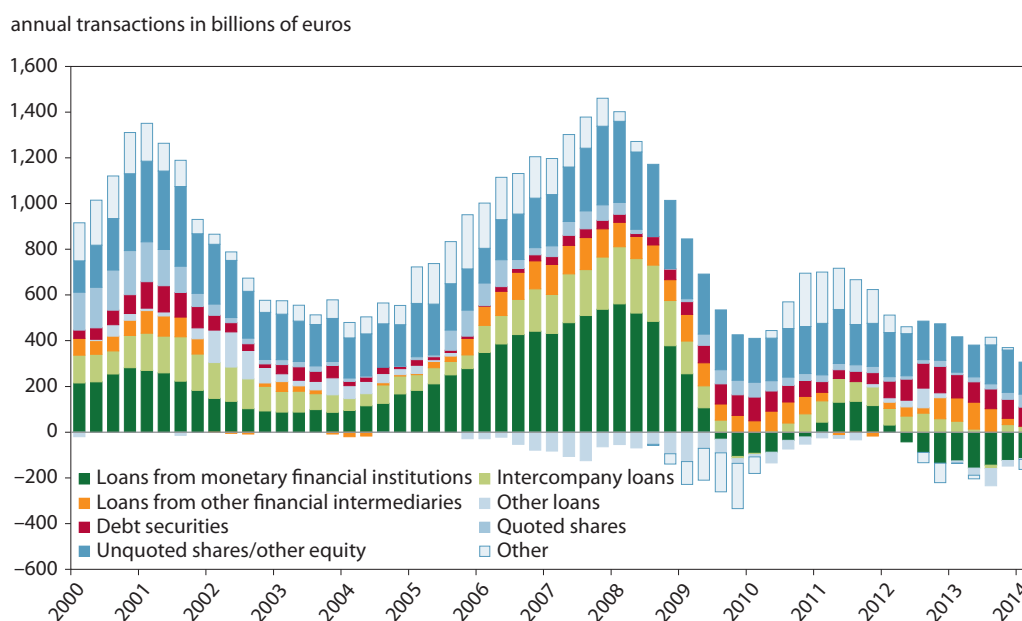*Source:* Authors' calculations on data from the European Central Bank and Eurostat, updated from Darvas et al. (2015).

ing during the crisis (see also ECB 2013), while gross savings increased. As a result of the financial turmoil and bank lending squeeze, firms in need of financing started diversifying their funding structure, although to varying degrees across countries. At the aggregate euro area level, annual transactions in bank loans markedly declined, both in 2009 and (more significantly) from 2012 onward. Other instruments such as unquoted equity, intercompany loans, debt securities, and more recently an increase in loans from other financial intermediaries, helped bridge the gap (figure 5).

Figure 4   Evolution of internal versus external corporate financing in euro area, 2000Q1–2014Q1

percent of GDP
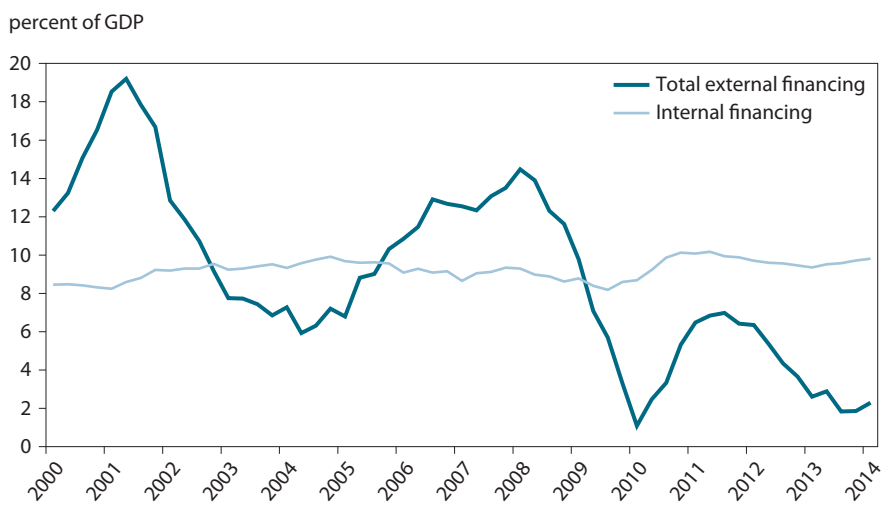
Note: External financing is defined as total liabilities and internal financing is defined as gross savings; four-quarter sums.
Source: Authors' calculations based on European Central Bank data. See also ECB (2013).

Figure 5   Financial funding of nonfinancial corporations in the euro area, 2000Q1–2014Q1

annual transactions in billions of euros

Source: Authors' calculations based on European Central Bank data. See also ECB (2013).

CORPORATE FINANCE IN CHINA: THE RISE OF SHADOW BANKING

The Chinese financial system has long centered around banks. In 2012, Chinese premier Wen Jiabao publicly stated that Chinese banks "earn profit too easily [...] because a small number of large banks have a monopoly" and that "to break the monopoly, [China] must allow private capital to flow into the finance sector."[4] Within the banking system, large, state-controlled banks re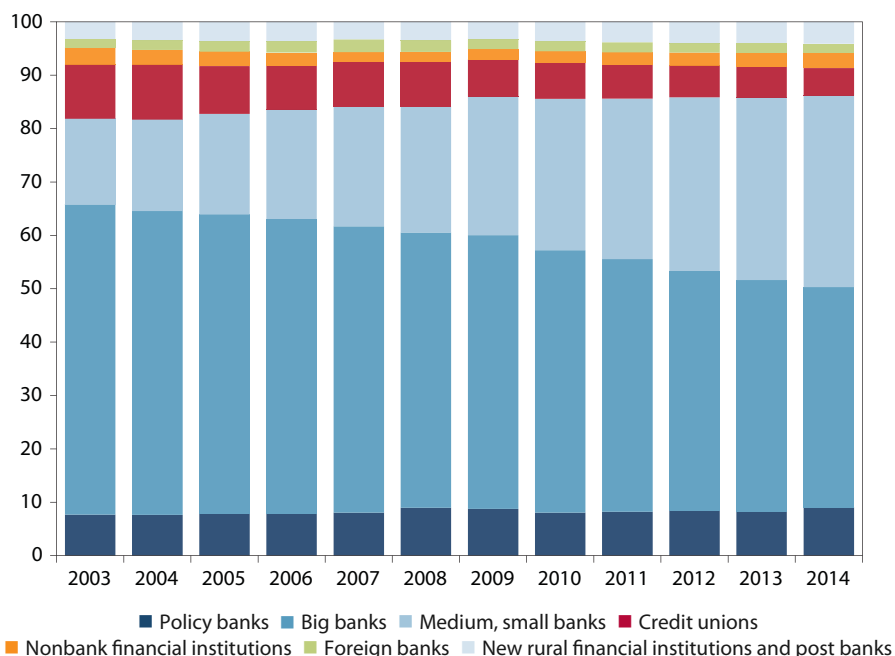main the major players, accounting for 68 percent of outstanding loans at the end of 2014.[5] New private banks, including ventures backed by internet operators like Alibaba and Tencent, have been awarded licenses and have just begun operations within the past year. Foreign banks remain marginal, accounting for only 1.6 percent of total banking assets (figure 6). Beyond owning most of their equity, the state provides significant direction to banks, through a variety of formal and informal tools.

The controlled lending environment in which Chinese banks operate has caused the emergence of shadow banking in China. The People's Bank of China (PBoC) sets limits on the amount banks can lend, which have become particularly strict since 2010

Figure 6   Composition of China's banking sector, 2003–14

percent of total banking sector

Policy banks ■ Big banks ■ Medium, small banks ■ Credit unions ■ Nonbank financial institutions ■ Foreign banks ■ New rural financial institutions and post banks
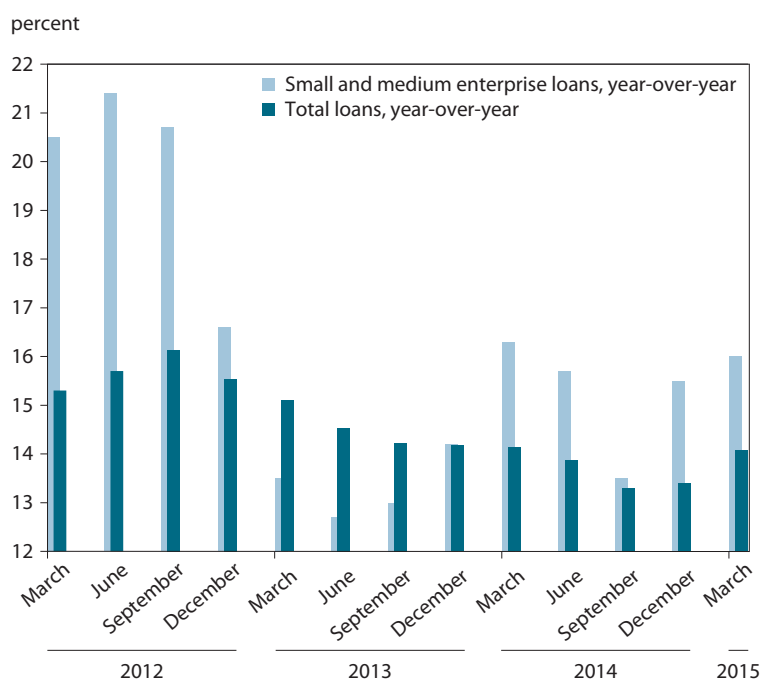
Source: Fielding Chen and Tom Orlik, "Banking on reform in China," Bloomberg Brief Economics Asia, July 2015, based on data from the China Banking Regulatory Commission.

to control credit growth. In addition, banks are required to comply with a 75 percent loans-to-deposit (LTD) ratio. This requirement has become increasingly painful as the growth of conventional deposits has slowed, thanks to competing shadow banking products that offer higher rates of return. Banks are also subject to a high reserve requirement, which also constrains their lending capacity. China's reserve requirement was raised 35 times between July 2006 and June 2011; it remained at 20 percent until February 2015, when it was lowered to 19.5 percent and then to 18.5 percent in April.[6]

---

4. D. MacMahon, L. Wei, and A. Galbraith, "Chinese Premier Blasts Banks," *Wall Street Journal*, April 4, 2012.

5. Fielding Chen and Tom Orlik, "Banking on reform in China," Bloomberg Brief Economics Asia, July 2015.

6. See Ma, Xiandong, and Xi (2011); Kevin Yao and Judy Hua, "China cuts bank reserve requirement to spur growth," Reuters, February 4, 2015; and Pete Sweeney, "China makes big cut in bank reserve requirement to fight slowdown," Reuters, April 20, 2015.

Figure 7   Growth in small and medium enterprise loans in China outpaced total loans, 2012Q1–2015Q1

percent

Legend:
- Small and medium enterprise loans, year-over-year
- Total loans, year-over-year

Source: Fielding Chen and Tom Orlik, "Banking on reform in China," Bloomberg Brief Economics Asia, July 2015, based on data from People's Bank of China.

Taken together, these regulatory requirements mean that lending supply may not satisfy demand. As a consequence, banks have to choose which borrowers to lend to. Chinese banks have preferred lending to state-owned enterprises (SOEs) and large firms (Goodhart and Zeng 2006, Edelmann et al. 2015). SOEs are typically bigger than private-sector peers, enjoy a more established market position, and are believed to benefit from an implicit government guarantee, which all things equal makes them a safer credit. Nicholas Lardy (2014, figure 3.6) shows that the share of enterprise loans going to SOES in the three years starting 2010 were 36, 28, 32 percent, respectively, while private firms got 48, 54, and 52 percent of loans to enterprises in the same years. Nevertheless, the share of small and medium enterprises (SMEs) appears very small. According to 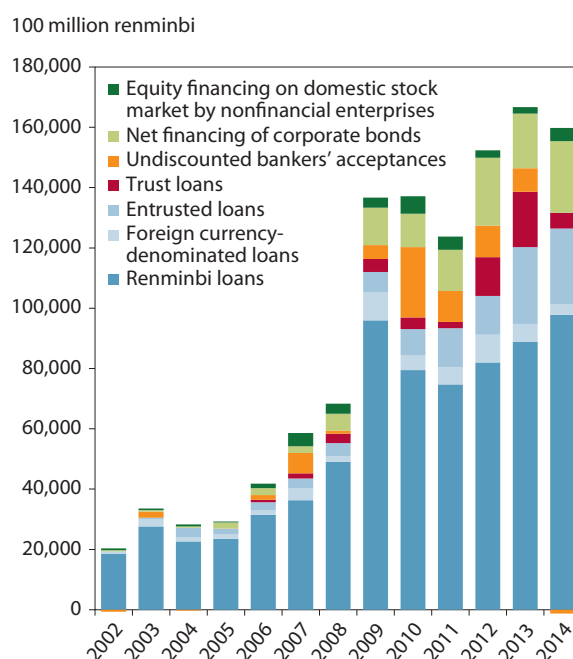Edelmann, Sheng, and Ng (2013), 99 percent of Chinese firms were SMEs, accounting for 70 percent of employment, 60 percent of GDP, and 50 percent of tax revenues and holding 65 percent of patents. Yet, they represented less than 20 percent of bank lending in 2011. While the amount of loans provided to small businesses has more than tripled from 2007 to 2012, it still accounts for only about a quarter of total bank loans (Edelmann et al. 2015). Loans to SMEs are up 16 percent year on year in the first quarter of 2015 (figure 7) but below the growth rates reached in 2012.

As a result, alternative credit channels, frequently referred to as "shadow banking," have appeared to fill this credit gap. Figure 8 shows the yearly flows in total social financing, an indicator that is widely used to analyze the Chinese shadow banking sector. Growth of regular bank loans has slowed since their massive expansion in 2009. By contrast, entrusted loans have grown faster since 2010; so did trust loans in 2012 and 2013.

Shadow banking in China takes different forms (Borst 2011; Elliott, Kroeber, and Qiao 2015), but one key point is the strong link between traditional banks and their shadow banking counterparts, especially trust companies. Hou, Gao, and Zhou (2014) provide an esti-

Figure 8   Development of China's shadow banking sector flows, 2002–14

100 million renminbi

Legend:
- Equity financing on domestic stock market by nonfinancial enterprises
- Net financing of corporate bonds
- Undiscounted bankers' acceptances
- Trust loans
- Entrusted loans
- Foreign currency-denominated loans
- Renminbi loans

Sources: China Statistical Yearbook 2012; People's Bank of China; authors' calculations.

mate of the shadow banking exposures of eight banks that make up the bulk of the banking system in China. Total shadow banking exposure of these banks would amount to RMB15.8 trillion: RMB4.3 trillion from on-balance-sheet quasi-credit exposures, RMB3.1 trillion from off-balance-sheet wealth management products (WMPs), and the remaining RMB8.4 trillion corresponding to other off-balance-sheet contingent liabilities.

Investors have long appeared to underestimate the risk involved in shadow investments. Shadow banking entities have been revealed to be financially fragile with increasing frequency since 2012, but until recently, local and/or central government intervened to shield the banks and their depositors from losses. However, the authorities' recent more hands off stance has resulted in an increase in market discipline. For example, on March 7, 2014, Shanghai Chaori Solar Energy Science & Technology Co., a solar equipment manufacturer, failed to meet interest payments of RMB90 million on an RMB1billion five-year bond it issued in 2011, and (unlike in an earlier episode in 2013) was not bailed out. This was the first-ever onshore bond default in China and its first default on publicly traded debt since 1999.[7]

Figure 9   Ratio of stock market capitalization to GDP, selected jurisdictions, 2001–15


percent

Note: United States includes NYSE and NASDAQ; European Union aggregates Athens exchange; BME; Borsa Italiana (later LSE Group); Budapest SE; Cyprus SE, Deutsche Boerse; Euronext; Irish SE; Ljubljana SE; London SE (later LSE Group); Luxembourg SE; Malta SE; Nasdaq OMX Nordic Exchange; Warsaw SE; Wiener Boerse. China aggregates stock exchanges in Hong Kong, Shanghai and Shenzhen. The GDP denominator for China is the total of the People's Republic of China, Hong Kong, and Macao. Data shown in figure go up to end-July 2015.
Source: Authors' calculations with data from World Federation of Exchanges.

Beyond shadow banking, another sign of diversification away from bank lending is the development of equity and bond markets. After declining in 2011, stock market capitalization has been increasing since 2014 (figure 9), even after taking into account the correction between mid-June and late August 2015. Almost all the recent increase has come from the mainland exchanges in Shanghai and Shenzhen, in contrast to Hong Kong, where the ratio of market capitalization to China's total GDP has remained fairly stable (around 40 percent) since 2010.

China's bond market has also grown significantly to RMB39.8 trillion (US$6.3 trillion) in 2015 from RMB12.6 trillion in 2007. That makes it the third-largest national bond market in the world, after the United States and Japan.[8] This is shown in figure 10, which reports data from the Bank for International Settlements (BIS) on the outstanding international and domestic debt securities issued by the private sector in selected economies.

BIS data (not shown in figure 10) also show that financial and nonfinancial corporates resident in China have significantly increased issuance of international debt securities since 2012, especially in 2014, with financial institutions the leading issuer. More recently, though, nonfinancial corporations have also increased issuance of international debt securities.

---

7. Jennifer Rankin, "No government rescue as first Chinese company defaults on domestic bond," *Guardian*, March 7, 2014.
8. Chen and Orlik, "Banking on reform in China."

Figure 10   Debt securities of financial and nonfinancial corporations, 2014Q3

billions of US dollars
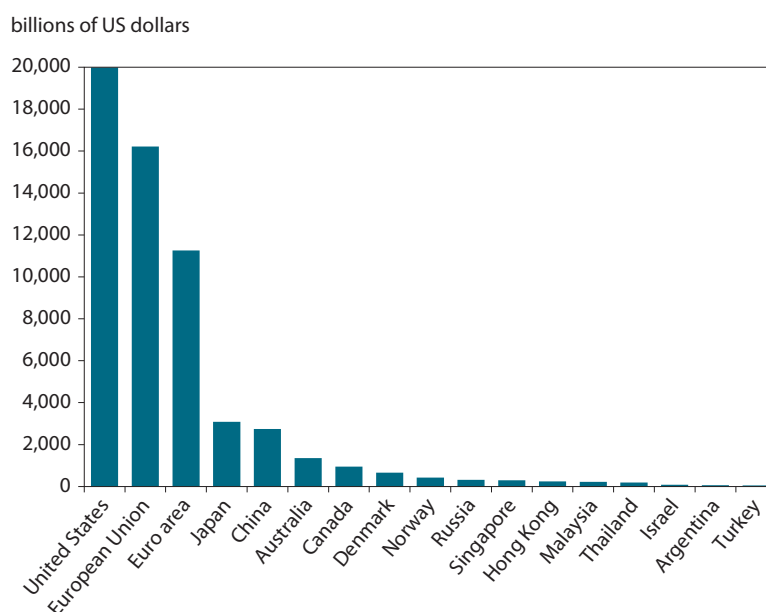
Note: Figure includes international and domestic debt securities issued by residents in each country; sectors considered are financial corporations and nonfinancial corporations. These statistics are not available for all countries. As a consequence, euro area is defined here as including France, Germany, Netherlands, Italy, Spain, Ireland, Austria, Belgium, Portugal, Finland, Greece, Slovakia, Cyprus, Slovenia, and Malta; European Union includes the euro area plus the United Kingdom, Denmark, Sweden, Poland, Czech Republic, and Hungary.
Source: Authors' calculations using Bank for International Settlements' data.

China started opening its bond markets to foreign investors in 2002, when it launched the Qualified Foreign Institutional Investor (QFII) program. The QFII status allows licensed foreign investors access to the exchange bond market and to buy and sell yuan-denominated equities and bonds in Shanghai and Shenzhen. In July 2012, the China Securities Regulatory Commission (CSRC) published a new regulation granting QFIIs access also to the interbank bond market, where most of the trading takes place. In December 2012, the Renminbi Qualified Foreign Institutional Investors (RQFII) program was introduced, which allows qualified financial institutions to establish yuan-denominated funds in Hong Kong, Singapore, Taiwan, London, and other centers for investment in mainland China (Huang, Li, and Pillai 2015). Since then, 24 QFIIs and 86 RQFIIs have been approved. In May 2015, the PBoC added 32 new foreign investors under the two programs, including HSBC, Morgan Stanley, Société Générale, BNP Paribas, and ING.[9]

POLICY RESPONSES IN THE EUROPEAN UNION

Since the introduction of the single currency in 1999, the euro area has undergone significant financial integration. But starting in 2009–10, the euro crisis reversed some of the financial integration achieved over the previous decade. Banks retrenched within national borders and financial markets became less internationally integrated.[10] Loans granted by euro area banks to counterparts located in different euro area countries had almost tripled in the decade preceding the financial crisis, compared with a more moderate (although significant) increase in loans to domestic borrowers. Banks' holdings of debt issued in other euro area countries increased

---

9. Gabriel Wildau, "Latest China bailout reveals risk of local govt's hidden debts," Reuters, May 7, 2013.
10. ECB (2014); Silvia Merler, "Home-(sweet-Home)-Bias," Bruegel blog, November 14, 2013.

by 4.5 times between 1999 and 2008 before the crisis, while holdings of debt issued by domestic resident sectors increased by only 50 percent.[11] Since the crisis, however, cross-border loans and debt holdings within the euro area have declined massively.

The key factor behind financial fragmentation in the euro area was the bank-sovereign vicious circle, which mutually reinforced problems on both the banking and the sovereign sides. Two key drivers stand out. First, during the early phases of the crisis, euro area countries were individually responsible for rescuing banks in their own jurisdictions. Given the size of banking sectors compared with GDP, the potential cost of bank rescues was high, putting the sovereign under pressure. Second, domestic banks were (and still are) considerably exposed to sovereign debt, often with a strong home bias, which tended to increase further during the crisis (ESRB 2015, Merler and Pisani-Ferry 2012).

As the crisis in the euro area worsened throughout 2010, 2011, and early 2012, EU policymakers became increasingly aware of the harmful impact of this bank-sovereign vicious circle and of other aspects of what might be termed "financial repression with European characteristics"—namely, the multiple ways in which national governments had distorted the operations of bank activity and forcibly channelled household savings for purposes deemed of national interest, including industrial policies and support to politically preferred projects. This European brand of financial repression included

- ownership or control by local or national governments of a number of banks;
- intervention into the financial system by national state-owned financial institutions such as France's *Caisse des Dépôts* or Germany's *Kreditanstalt für Wiederaufbau*;
- tweaks in tax rules and financial regulations that favored lending to governments or to preferred sectors of the economy, including (but not limited to) the notorious assigning of zero risk-weight to all sovereign debt in the European Union (including Greece's even after its March 2012 restructuring) for the purposes of calculating banks' regulatory capital ratios;
- sector-specific accounting and auditing practices, even after the adoption in 2005 of International Financial Reporting Standards (IFRS);
- curbs on nonbank finance, such as prohibiting companies that are not licensed banks from offering leasing and factoring services, in France and other EU member states; and
- selective or complacent enforcement of competition policy in the banking sector by some national competition authorities.

The proliferation of problems in Germany's *Landesbanken*, in some regional banks in Austria (such as Hypo Alpe Adria), in the French-Belgian bank Dexia, and in Spain's savings banks (*cajas*), many of which required costly taxpayer-financed bailouts, illustrate the unintended consequences of such financial repression in the context of the crisis.

Another influence was associated with financial repression but unique to the EU context, because of its strong and enforceable single market and competition policy framework. Prudential authorities had a perverse incentive to put the aim of promoting and defending national banking champions in the pan-European competition above their financial stability mandate, with disastrous results.[12] While such "banking nationalism" still lingers, policymakers are increasingly recognizing its destabilizing effect.

---

11. Darvas et al. (2015); Merler, "Home-(sweet-Home)-Bias."
12. Nicolas Véron, "Banking Nationalism and the European Crisis," speech at the European Private Equity and Venture Capital Association Symposium, Istanbul, June 2013, www.piie.com/publications/papers/veron20130627.pdf.

The duress experienced in the systemic crisis has led to major new policy initiatives since 2012. The most important change is Europe's banking union, which involves significant transfer of responsibility for banking policy from the national to the European level in all countries of the euro area, with the option for other EU member states to join in the future (Véron 2015). The banking union framework includes two major components: the empowerment of the European Central Bank (ECB) as single supervisor of all banks in the euro area, effective since November 2014; and the establishment of a new (and admittedly complex) architecture for bank crisis resolution, which is expected to be fully operational in January 2016.

In turn, these changes have enabled a comprehensive overhaul of the framework for future bank crisis management in the European Union, known as the Bank Recovery & Resolution Directive (BRRD), which is intended to foster market discipline and force private-sector claimants to bear losses through bail-in mechanisms, also starting in January 2016 (Véron 2015). While these new arrangements are still entirely untested, they represent a convergence of the European Union toward the model of crisis management and resolution that has been in place in the United States for decades for depository banks and was broadened by the Dodd-Frank Act of 2010 to all systemically important financial institutions.

Moreover, the inception of the banking union has provoked a debate in Europe about moving toward a more diversified and market-driven financial system, building on the lessons from the destabilizing effects of financial repression and of the dominance of bank intermediation in the lead-up to the crisis and in subsequent developments in the euro area. In the wake of Jean-Claude Juncker's initial announcement in July 2014 of a capital markets union, the European Commission has consulted widely on which specific measures to prioritize to develop the role of capital markets in the European Union and is expected to publish an action plan later in 2015. This may include short-term initiatives to encourage equity issuance and debt securitization but could also develop into a more ambitious effort to reform areas such as insolvency law, taxation of savings and financial investments, prudential regulation, and enforcement of disclosure requirements, with significant impact on the future structure of the European financial system (Véron and Wolff 2015).

These recent developments in Europe have ample precedent (Maes 2007). Indeed, the European capital market agenda goes back at least half a century. In November 1966, the Commission of the European Economic Community (the predecessor of today's European Commission) published a landmark report *The Development of a European Capital Market*, produced by a group of experts chaired by Claudio Segré, a Commission official (EEC Commission 1966). Since then, the policy push to develop capital markets in the European Union has waxed and waned. Capital controls were comprehensively abolished by two pieces of EU legislation in 1987 and 1988. The adoption of the euro in the 1990s increasingly integrated bond markets, and a Financial Services Action Plan of the European Commission in 1999 resulted in the adoption of further market-friendly legislation, such as the Markets in Financial Instruments Directive of April 2004, which ended local monopolies of stock exchanges as trading venues. The European Securities and Markets Authority (ESMA) was established in 2011, with supervisory authority of its own on certain market participants such as credit rating agencies and trade repositories. Nevertheless, the policy effort to create a European capital market, which the capital markets union agenda seeks to expand, remains very difficult, complex, and unfinished.

RECENT REGULATORY ACTION IN CHINA

The Chinese government has long been reluctant to take assertive regulatory action to tackle the risks associated with shadow banking. On one hand, regulators have tried to keep banks safe and debt levels under control by curbing credit growth with caps on bank lending, which has nurtured shadow banking. On the other hand, the government continues to want fast growth, which requires credit, and has therefore left shadow banking channels open. The International Monetary Fund (IMF) observed in its 2011 review of China's financial system that "China takes a fairly pragmatic approach to regulation and will often wait for the actual emergence

of business cases demanding new rules before acting. It is responsive rather than proactive" (IMF 2011). In a 2014 report, the ratings agency Standard & Poor's similarly noted that "The advent of the WMP market was broadly positive. Households and savers got more choice, more diversification and better returns. Banks found a new source of income. And issuers could tap into a new and deep savings pool. However, there were risks as well. [...] The regulators were vulnerable to falling behind the curve in terms of monitoring risks" (Standard & Poor's 2014).

One illustration of the inherent tension was back in 2009, when a Chinese court sentenced 28-year-old Wu Ying to death for taking $55.7 million from investors by promising them high interest rates, which were never paid. Wu wouldn't be the first shadow investor to be put to death in China, but her case sparked broad interest among the public, drawing in China's top leadership, including Premier Wen Jiabao, who weighed in on the case in 2012. When asked about Wu's case, he said that "Chinese companies, especially small ones, need access to funds…. Banks have yet to be able to meet [sic] those companies' needs, and there is a massive amount of idle private capital. We need to bring private finance out into the open."[13] The Supreme People's Court reduced the sentence to life imprisonment in 2014. In December 2012, PBoC Governor Zhou Xiaochuan reportedly downplayed the risk to financial stability from shadow banking, saying "the vast majority of the financial activities conducted by China's non-bank institutions are regulated. It's not like other countries where they completely escaped regulation."[14]

Since 2012, however, the risks have become more visible. The IMF raised the issue in its 2014 Article IV Consultation and in the *Global Financial Stability Report* (IMF 2014a, 2014b); in a speech in early 2013 Yan Qingmin, assistant chairman of the China Banking Regulatory Commission (CBRC), said that some banks were improperly creating asset pools with their WMPs—a practice whereby inflows from new investors can be used to repay old investors and thus cover up failed investments.[15]

At the end of 2013, new rules were established to contain risks in the shadow finance sector while also formalizing the role of nonbank lenders in the economy.[16] The State Council issued Circular 107 titled "A notice about some issues related to strengthening shadow banking regulation," which constitutes China's first overarching regulatory framework for shadow banking and identifies three kinds of shadow banks to be monitored more closely (a summary of this and other relevant policy documents is presented in appendix A). According to analysts, the proposed new rules were not as harsh as those drafted in 2013 to limit interbank lending, and they indicate a moderately permissive official stance.[17] The differences between the PBoC and the CBRC over how hard to press so-called shadow bankers have influenced China's efforts to rein in this sector.[18] The PBoC, which has few tools to deal with shadow banking directly, was reported to have been frustrated at what it saw as the unwillingness of the CBRC to toughen regulation of banks' dealings with shadow lenders. In June 2013, it drove up rates that banks charge each other in the interbank market, a move intended to make credit less available to banks' off-balance-sheet lending activities and other shadow lenders. But the central bank's efforts have been criticized as throwing markets into turmoil when interest rates spiked, and the efforts have not had immediate effect on shadow lenders.

Circular 127, published in May 2014, aims at governing the interbank business and proprietary investments made by financial institutions, with the aim of slowing the flow of funds from commercial banks to the shadow banking system (Deutsche Bank 2014). Significantly, it was jointly put forward by the PBoC, the State Administration of Foreign Exchange (SAFE), and the three regulators, namely CBRC, CSRC, and China

---

13. "Shadow Banks on Trial as China's Rich Sister Faces Death," *Bloomberg Business*, April 11, 2012.
14. Simon Rabinovitch, "Uncertain Foundations," *Financial Times*, December 2, 2012.
15. Simon Rabinovitch, "China to tighten shadow banking rules," *Financial Times*, February 26, 2013.
16. Simon Rabinovitch, "China draws up new rules to curb shadow banking risks," *Financial Times*, January 6, 2014.
17. Simon Rabinovitch, "Foreign banks warn over China lending limit rules," *Financial Times*, December 9, 2013.
18. Wei Lingling and Rob Davis, "Regulators at odd on reining in China's shadow lending," *Wall Street Journal*, January 14, 2014.

Insurance Regulatory Commission (CIRC). It suggests joint commitment of all the agencies to address shadow banks' links with traditional banking. But this agreement may have involved a compromise, as market analysts have assessed the regulation to be less stringent than expected (Deutsche Bank 2014). In January 2015 the CBRC issued draft rules to tighten supervision of entrusted loans, a component of total social financing that had previously been growing fast.[19] As a result, flows of entrusted loans and trust loans appear to have been sharply squeezed in early 2015.

These developments take place in the context of the broader Chinese debates on market reform and interest rate liberalization, in which the PBoC has taken a leading role. While a source of potential financial instability, the shadow banking system is seen as a more developed and liberalized system of credit allocation, where interest rates are higher than those in the formal banking system (both for investors and borrowers) and transactions take place more at arm's length, with less emphasis on political connections.[20] From this perspective, the authorities appear to have seen the development of an alternative credit system as a way to drive financial reforms.

In March 2014, PBoC Governor Zhou Xiaochuan suggested that China would free up interest rates on bank deposits within two years.[21] The relaxing of interest rate controls was part of the broader ongoing effort at liberalizing China's financial system, before the market correction of summer 2015. The effort also included creation of a formal mechanism for deposit insurance, which may become part of a future special resolution framework for failing banks. The PBoC has said deposits up to RMB500,000 (US$80,600) would be insured. The scheme started in May 2015.[22] China is also gradually opening its capital account, with the establishment in 2014 of the Shanghai–Hong Kong Stock Connect. Before the summer 2015 equity market corrections, further steps were widely anticipated, including liberalization on a trial basis through the Shanghai Free Trade Zone, and additional initiatives to develop the bond market. Following the market correction, and even though it is too early to judge all its policy consequences, there is no conclusive indication that the general direction towards liberalization might be reversed.[23]

CONCLUSION: PROSPECTS FOR STRUCTURAL CHANGE AND OPPORTUNITIES FOR CROSS-LEARNING

Vast differences exist between financial structures and regulatory policy debates in the European Union and China, but there are also a number of common threads.

In both jurisdictions, authorities have recognized the advantages in diversifying their financial systems away from dominance of banks. Their motivations are multiple. One aim is to increase the system's resilience in a banking downturn. A bank-dominated system also raises concerns about market discipline. The relationship-based model of bank lending is easily captured by political or other interests, which distorts capital allocation. Capital markets promise a more arm's-length system. Another motivation is to improve financing options for the most dynamic companies in a knowledge economy, such as service innovators. These companies typically have no tangible collateral to pledge, and therefore, traditional bank lending is not necessarily the best-suited form of funding them. The development of nonbank finance also offers opportunities for savers by expanding the range of investment options and allowing them to escape the restrictions associated with financial repression policies.

---

19. Jianxin Lu and Pete Sweeney, "China issues draft rules restricting entrusted lending," Reuters, January 18, 2015.
20. See also James Parker, "China's shadow banking challenge," *Diplomat*, January 20, 2014.
21. Wei Lingling and Rob Davis, "China Will Free Interest Rates, as It Loosens State's Reins," *Wall Street Journal*, March 12, 2014.
22. "China c.bank issues guidelines for large certificates of deposit," Reuters, June 2, 2015.
23. Nicholas R. Lardy, "False Alarm on a Crisis in China," *New York Times*, August 26, 2015.

However, the obstacles to the development of capital markets should not be underestimated, in either China or the European Union. Effective capital markets require a strong, high-quality infrastructure in terms of corporate financial transparency, governance, quality of disclosure, accounting and auditing frameworks, and operation of the legal system, especially with respect to protection of property rights and operation of insolvency processes. In China, many of these features are still developing, while, in the European Union, these features tend to vary widely across member states, thus preventing the emergence of pan-European market segments that would offer sufficient scale to reap efficiency gains. Furthermore, the development of nonbank finance makes the monitoring of the financial system as a whole more difficult, in line with its increased complexity. Such development thus makes it indispensable to put in place more comprehensive and effective surveillance, data collection, and macroprudential frameworks, which pose a challenge in both China and the European Union. Reform towards a more diverse system is also bound to be vehemently resisted by special interests, both in the public sector, as authorities lose some of the control over the financial system that they can maintain over banks, and in the private sector, as banks may have to compete with other channels of financing and thus lose market share and/or profitability.

Overall, history suggests that financial system structures evolve gradually. Unless new information technology–enabled business models radically disrupt finance, banks will retain a major share of financial intermediation in both China and the European Union for an extended period. Nevertheless, if accompanied by effective macroprudential monitoring and oversight, the gradual development of nonbank financing channels can bring stability and growth benefits to both economies.

Finally, both China and the European Union can learn from each other about financial reform. The European Union offers China lessons on the numerous steps and continued efforts needed to alter deeply entrenched financial system structures. The Segré report of 1966 exposed that "The way available resources are distributed between the various sectors [...] depends essentially on decisions taken by the authorities. The scale of public investment, the major role played by official financial intermediaries and the dominant position on the market held by the public authorities leave only a small area in which the play of traditional market forces can determine the allocation of resources"—a description that fit China a few years ago if not today (EEC Commission 1966, cited in Maes 2007). While different, both Chinese and European versions of financial repression share a surprising range of common features. Chinese reformers can learn from the European Commission's persistent efforts to liberalize and develop markets, and the dogged resistance of an entrenched political economy of European finance over the years and decades, with a historical depth that their own breath-taking pace of development over the last decades does not offer.

Conversely, EU policymakers have much to learn from Chinese dynamism and pragmatism when it comes to financial reform. The tolerance of shadow banking is a case in point, in contrast to the oft-observed EU tendency to repress financial innovation before it is even allowed to show its benefits. The same observation may apply to internet finance, a rapidly growing segment in which China appears to successfully leapfrog Western stages of financial development (Xie and Zou 2015). Chinese authorities have not only allowed internet finance to develop but also warmly embraced it, and there are indications that they are actively debating a reform of their supervisory institutions to adapt to its growth,[24] an issue that is barely debated if at all in the European Union.

The United States, of course, will remain an irreplaceable reference point in discussions about financial regulatory reform, in both the European Union and China. But especially as they face a similar challenge of reducing the relative role of banks in their respective financial systems, authorities will gain a richer and more nuanced understanding of the opportunities and challenges they face by looking at each other's experiences and learning from them.

---

24. Based on one of the authors' conversations with Chinese policymakers in Beijing, Shanghai, and Washington, DC, in May and June 2015.

Appendix A China's Regulatory Action on Shadow Banking

Regulation	Release	Asset under scrutiny	Key requirements
Circular no.8 (China Banking Regulatory Commission)	March 2013	Off-balance-sheet nonstandardized wealth management products (WMPs)	- Exposure to nonstandard WMPs capped at 35 percent of total WMP assets under management and 4 percent of total assets - Banks to charge proper capital and provisions for the assets
Circular no. 107 (State Council)	January 2014	All WMPs	- Banks to charge capital and provisions for assets accordingly - Banks not allowed to use WMPs to purchase the credit assets issued under the WMP
Circular no. 127 (joint People's Bank of China, State Administration of Foreign Exchange, China Banking Regulatory Commission, China Insurance Regulatory Commission, and China Securities Regulatory Commission)	May 2014	Interbank business and proprietary investments by financial institutions	- Reverse repo and repo: disqualification of trust beneficiary rights (TBR) and other illiquid credit assets as the collateral and guarantee from third parties for all new businesses; prohibition of carving out the collateral assets of repo transactions from the balance sheet - Proprietary investments: appropriate risk weight and provisions to be set aside for nonstandardized financial investments, including bank WMPs, TBR and asset management plans issued by mutual funds, insurance companies, and brokers - Cap on interbank borrowing to be less than one-third of total liabilities - Interbank deposits: to distinguish between deposits and deposits for settlement - Imposition of cap of maximum duration for interbank business: duration of interbank deposit cannot exceed three years, while the duration of other interbank business cannot exceed one year - Interbank entrusted payment: no loan-type entrusted payment is allowed
Circular no. 140 (China Banking Regulatory Commission)	May 2014	Commercial banks	- Requirement to centralize the management of interbank assets at headquarters level - Requirement to integrate risk control within each bank's credit risk management
Circular no. 9 (China Banking Regulatory Commission)	Pending	TBR held by banks under interbank assets	- Interbank loan exposure capped at 50 percent of deposits - Exposure to nonbank financial institutions capped at 25 percent of deposits - Exposure to a single financial institution capped at 100 percent of capital - Banks to charge proper capital and provisions for the assets - Banks not allowed to provide or receive implicit guarantees on interbank transactions

Sources: Manulife Asset Management (2014); Deutsche Bank (2014).

REFERENCES

Borst, Nicholas. 2011. China shadow banking primer. PIIE China Economic Watch, November 1, http://blogs.piie.com/china/?p=587.

Darvas, Zsolt, Carlos De Sousa, Pia Huettl, Silvia Merler, and Thomas Walsh. 2015. *Analysis of developments in EU capital flows in the global context.* Bruegel external publication (January). Brussels: Bruegel.

Deutsche Bank. 2014. *Finally delivering clarity on inter-bank regulations.* Chinese Banks: Policy Update. Deutsche Bank Markets Research Industry Update (May 19). Hong Kong.

ECB (European Central Bank). 2013. *Corporate Finance and Economic Activity in the Euro Area.* Structural Issues Report 2013. Occasional Paper 151 (August). Brussels.

ECB (European Central Bank). 2014. *Financial Integration in Europe* (April). Brussels.

Edelmann, Christian, Andrew Sheng, and Chow Soon Ng. 2013. *Asia Finance 2020: Framing a new Asian financial architecture.* Hong Kong: Oliver Wyman and Fung Global Institute.

Edelmann, Christian, Jodie Hu, Andrew Sheng, and Cliff Sheng. 2015. *Bringing light upon the shadow: a review of the Chinese shadow banking system* (March). Hong Kong: Oliver Wyman and Fung Global Institute.

EEC Commission (1966). *The Development of a European Capital Market.* Report of an expert group formed by the Commission of the European Economic Community (March). Brussels.

Elliott, Douglas J., and Kai Yan. 2013. *The Chinese Financial System: An Introduction and Overview.* John L. Thornton China Center Monograph Series 6 (July). Washington: Brookings Institution.

Elliott, Douglas J., Arthur R. Kroeber, and Yu Qiao. 2015. *Shadow Banking in China: A Primer* (March). Brookings Economic Studies. Washington: Brookings Institution.

ESRB (European Systemic Risk Board). 2015. *Report on the Regulatory Treatment of Sovereign Exposures* (March). Frankfurt.

Goodhart, Charles, and Zeng Xiaosong. 2006. China's banking reform problems and potential solutions. *Journal of Chinese Economic and Business Studies* 4, no. 3: 185–98.

Hou Wei, Gaye Gao, and Zhou Min. 2014. *Chinese Banks—Initiating coverage; Deleveraging, De-risking and (finally) Diverging?* (September 16). New York: Sanford Bernstein Research.

Huang, Harry, Lily Li, and Subash Pillai. 2015. *FAQ: China's Bond Market, First Half 2015* (March). New York: Goldman Sachs Asset Management.

IMF (International Monetary Fund). 2011. *People's Republic of China: Financial System Stability Assessment* (November). Washington.

IMF (International Monetary Fund). 2014a. *People's Republic of China: 2014 Article IV Consultation* (July). Washington.

IMF (International Monetary Fund). 2014b. Risk taking, liquidity and shadow banking: Curbing excess while promoting growth. *Global Financial Stability Report* (October). Washington.

Lardy, Nicholas R. 2014. *Markets over Mao: The Rise of Private Business in China.* Washington: Peterson Institute for International Economics.

Ma Guonan, Yan Xiandong, and Liu Xi. 2011. *China's evolving reserve requirements.* BIS Working Paper 360 (March). Basel: Bank for International Settlements.

Maes, Ivo. 2007. *Half a Century of European Financial Integration: From the Treaties of Rome to the 21st Century.* Brussels: Mercatorfonds.

Manulife Asset Management. 2014. *China's shadow banking system: Orderly defaults ahead* (April). Hong Kong.

Merler, Silvia, and Jean Pisani-Ferry. 2012. *Who's afraid of government bonds?* Bruegel Policy Contribution 2012/02 (February). Brussels: Bruegel.

Okazaki, Kumiko. 2007. *Banking System Reform in China: The Challenges of Moving Toward a Market-Oriented Economy.* RAND Occasional Paper. National Security Research Division, RAND Corporation.

Standard & Poor's. 2014. *Cracks in the Fortress? Challenges Rise Within China's Financial Sector.* Standard & Poor's Ratings Services (March 3).

Véron, Nicolas. 2015. *Europe's Radical Banking Union.* Bruegel Essays & Lectures Series (May). Brussels: Bruegel.

Véron, Nicolas, and Guntram Wolff. 2015. *Capital Markets Union: A Vision for the Long Term.* Bruegel Policy Contribution 2015/05 (April). Brussels: Bruegel.

Wei Shang-Jin, and T'ao Wang. 1997. The Siamese Twins: Do state-owned banks favor state-owned enterprises in China? *China Economic Review* 8, no. 1.

Xie Ping, and Zou Chuanwei. 2015 (forthcoming). *Internet Finance in China.* Taylor & Francis.