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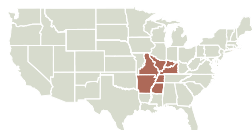
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The Composition of Long-term Unemployment Is Changing toward Older Workers

By Alexander Monge-Naranjo and Faisal Sohail

The Great Recession has been officially over for more than six years, but the rate of long-term unemployment (26 weeks or longer) remains elevated. Two age groups have been hurt the most: those 25-44 and, even more so, those 55 and older.

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Some Considerations for Dividend Payments to Fed Member Banks

The Federal Reserve was established by an act of Congress more than 100 years ago. The regional Reserve banks—such as the St. Louis Fed—were set up, by law, as private corporations owned by their member banks. This was done on purpose as part of a compromise to disperse throughout the country power that might otherwise be disproportionately centered in Washington, D.C. The Federal Reserve Act included a provision that member banks would provide capital to the Reserve banks.¹ This allowed for a source of funding for the Reserve banks since there were no appropriations from Congress. This was, of course, very handy from the congressional perspective.

While Fed member banks are required to contribute capital, the contribution is illiquid because there is no market for the equity position. Unlike stock in a typical U.S. corporation, stock in the Fed cannot be bought or sold, nor can it be used as collateral. From the perspective of member banks, the requirement that they contribute capital to the Fed means that they cannot use that capital for other purposes, such as supporting loans and other investments. Sometimes this is referred to as “dead capital.”

The Federal Reserve Act did, however, recognize this situation and address the sterility of the capital requirement. The act included a provision that member banks in a Federal Reserve district would be paid a dividend of 6 percent annually on their paid-in capital stock. While this has worked well for 100 years and has not been much of an issue, these dividend payments have recently drawn the attention of Congress as it seeks to find sources of revenue.

In 2014, the total amount of dividends paid by Federal Reserve banks to their member banks was about \$1.7 billion. In an effort to help fund the recent transportation bill, a congressional proposal suggests reducing the dividend payment rate from


6 percent to 1.5 percent for member banks that have over \$1 billion in assets. This proposal would arguably put a tax on member banks to finance roads and bridges. Such a proposal is not in line with the benefit principle of taxation, which suggests that taxes for roads and bridges should come from the people who use the roads and bridges.

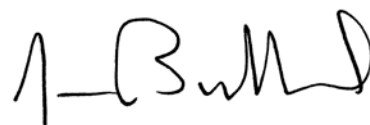
The long-established dividend rate has not varied over time. The 6 percent has held when short-term interest rates in the U.S. were as high as 20 percent, circa 1980, and when they were very low, as they are today. It is possible that congressional concern relates in part to the inflexibility of the dividend rate. To fix that problem, however, it does not make sense to replace one inflexible rate with another inflexible rate. One alternative would be to make the dividend payment more flexible, moving up and down naturally with the general level of interest rates. The dividend rate could be made adjustable, perhaps by linking it to a benchmark rate of interest like the rate on a 10-year U.S. Treasury security. This could be interpreted as saying, in effect, that the money being borrowed by the federal government from the private sector to capitalize Reserve banks would garner the same rate of return as other money borrowed by the federal government. This might be a reasonable principle on which Congress could settle this issue.

Another possible resolution of this issue would be to expand the fraction of required capital that remains on call to 100 percent from the current 50 percent. As it stands now, a member bank is required to commit capital to the Reserve bank, but half of the required amount remains “on call” and the other half has to actually be paid in, with the Fed paying dividends on the latter portion. Since the probability that the Reserve bank would have to call in capital is very remote—many would say zero—Congress



may wish to consider simply making the entire required capital amount “on call.” This would relieve the member banks from having “dead capital” and, so, would eliminate the dividend issue altogether, with minimal changes to the structure of the Fed. Implementing this proposal would require Reserve banks to refund the current capital contributions of the member banks (\$28.6 billion at year-end 2014).

In summary, recent proposals in Congress suggest taking revenue away from Fed member banks to pay for needed national transportation improvements. Such a proposal means that Fed member banks would be saddled with low return, “near-dead” capital. The proposal violates the benefit principle of taxation. Nevertheless, Congress could achieve the goal of a more flexible dividend rate by tying it to a benchmark rate, such as that on a 10-year Treasury security. Alternatively, Congress could eliminate the dividend issue altogether by legislating that the entire amount of required capital be “on call,” whereas only half of required capital is on call today. 



James Bullard, President and CEO
Federal Reserve Bank of St. Louis

END NOTE

- ¹ Member banks own stock in the Reserve banks. A member bank's stock is equivalent to 6 percent of its capital and surplus; half of that amount is paid in. For more information, see *The Federal Reserve System: Purposes & Functions*, at www.federalreserve.gov/pf/pdf/pf_1.pdf.



Trapped

Few Developing Countries Can Climb the Economic Ladder or Stay There

By Maria A. Arias and Yi Wen

The low- or middle-income trap phenomenon has been widely studied in recent years. Although economic growth during the postwar period has lifted many low-income economies from poverty to a middle-income level and other economies to even higher levels of income, very few countries have been able to catch up with the high per capita income levels of the developed world and stay there. As a result, relative to the U.S. (as a representative of the developed world), most developing countries have remained, or been “trapped,” at a constant low- or middle-income level.

Such a phenomenon raises concern about the validity of the neoclassical growth theory, which predicts global economic convergence. Specifically, economics Nobel Prize winner Robert Solow suggested in 1956 that income levels in poor economies would grow relatively faster than income in developed nations and eventually converge with the latter through capital accumulation. He argued that this would happen as technologies in developed nations spread to the poor countries through learning, international trade, foreign direct investment, student exchange programs and other channels.¹

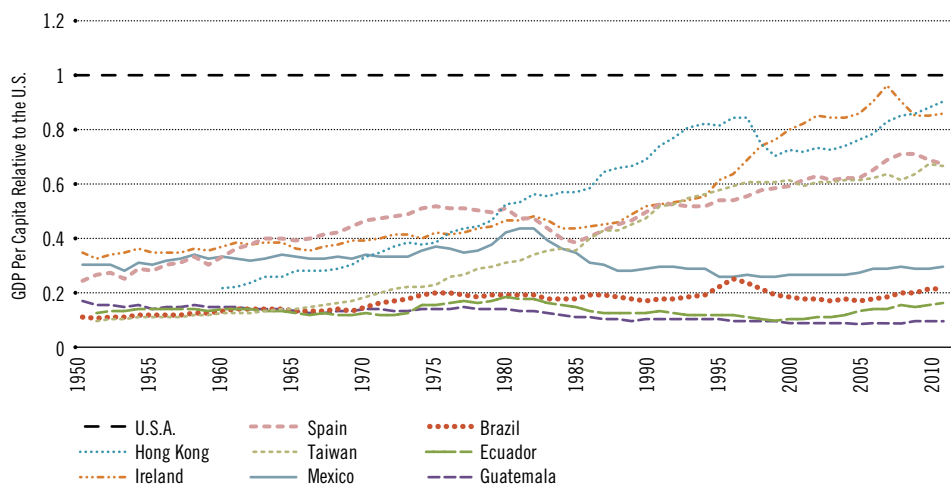
But the cases in which low- or middle-income countries have successfully caught up to high-income countries have been few.

Many poor countries today have a per capita income that is 30 to 50 times smaller than that of the U.S. and sometimes even lower (less than \$1,000 per year in 2014). For such countries to catch up to U.S. living standards, it may take at least 170 to 200 years, assuming that the former could maintain a growth rate that is constantly 2 percentage points over the U.S. rate (which is about 3 percent per year). This would be difficult, if not impossible. It is even harder to imagine that such countries could reach U.S. living standards within one to two generations (40 to 50 years), similar to how North American and Western European economies caught up to Britain during the 1800s after the Industrial Revolution. To achieve that speed of convergence today, the developing countries would need to grow about 8 percentage points faster than the U.S. (or about 11 percent per year) nonstop for 40 to 50 years. In recent history, only China came close to this; it was able to maintain a 10 percent annual growth rate (7 percentage points above the U.S. rate) for 35 years, but per capita income in China was still only one-seventh of that in the U.S. in 2014.

Hence, the lack of income convergence and the relative income traps appear to be real problems.

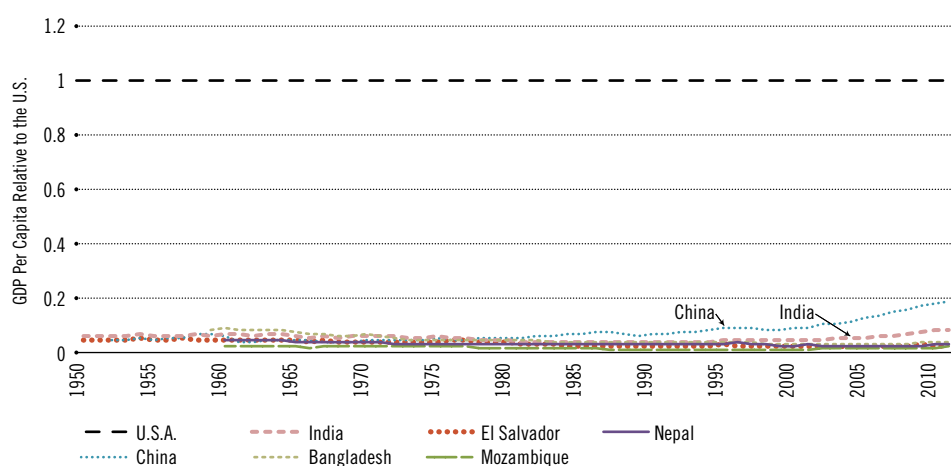
In this article, we first define the concept of an income trap and describe evidence that

FIGURE 1
Relative Middle-Income Trap



SOURCES: Penn World Table 8.0 and authors' calculations.

FIGURE 2
Relative Low-Income Trap



SOURCES: Penn World Table 8.0 and authors' calculations.

points to the existence of both low- and middle-income traps. Second, we analyze the historical probability of transitioning to higher relative income groups and test the persistence of the traps over time. Finally, we offer some hypotheses on the existence of income traps, as well as their policy implications.

Defining the Income Trap

The economic development literature provides various ways to classify countries by income groups, as well as several definitions of the “poverty trap” and the “middle-income trap.”² Most researchers have used absolute measures of income levels (such as median income per capita) or growth rates

to define what constitutes a low- or middle-income trap, but in doing so, they have ignored the more pervasive phenomenon of the lack of convergence.

Although many so-called middle-income countries have experienced persistent economic growth, their growth rates never surpassed the U.S. growth rate; consequently, these countries have been unable to close their income gaps with the U.S. In other words, these countries remain “trapped” at *relatively* lower income levels compared to the living standards of the developed countries, contrary to the neoclassical growth theory’s predictions that they will converge due to technology spillover and international capital flows.

The lack of relative income convergence implies that income per capita in the U.S., as well as general living standards, will continue to be 10 to 50 times higher than in low-income economies and two to five times higher than in middle-income economies. Therefore, redefining the low- and middle-income traps as situations in which income levels relative to those of the U.S. remain constantly low and without a clear sign of convergence allows us to study the issue of economic convergence (or lack of it) more directly.

The most common examples of rapid and persistent relative income growth (leading to convergence) are the Asian Tigers (Hong Kong, Singapore, South Korea and Taiwan); other countries include Spain and Ireland.³ Figure 1 shows a sample of these economies where relative per capita income grew significantly faster than in the U.S. beginning in the late 1960s all through the early 2000s, catching up or converging to the higher level of per capita income in the U.S. In sharp contrast, per capita income relative to the U.S. remained constant and stagnant between 10 percent and 40 percent of U.S. income among the Latin American countries that are listed. Despite experiencing moderate absolute growth during the same period, they remained stuck in the “relative middle-income trap” and showed no sign of convergence to higher income levels.

The lack of convergence is even more striking among low-income countries (Figure 2). For example, Bangladesh, El Salvador, Mozambique and Nepal are stuck in a poverty trap, where their relative per capita income is constant at or below 5 percent of

the U.S. level. Even though their economies might have grown moderately in absolute terms, they have not grown at a rate faster than the U.S. growth rate; thus, their relative income levels have not increased. As a result, the income gap between these nations and the U.S. has permanently been at least 20 times their own income per capita.

In comparison, China has been able to grow relatively faster than the U.S. since about the early 1980s, breaking away from the relative low-income trap and reaching middle per capita income levels. India has also shown signs of escaping the low-income trap since the early 1990s. However, both countries still have a long way to go to catch up and converge to the levels seen in developed economies, and both have yet to encounter the relative middle-income trap.

Are the Traps Real?

Studying the historical evidence of how a country's relative income changed after a given number of years confirms the existence of both relative income traps. For each year between 1950 and 2011, we determined whether a country's relative income fell into a low range (≤ 15 percent of U.S. income), middle range (>15 to 50 percent of U.S. income) or high range (>50 percent of U.S. income). We then compared that relative income classification to the same country's relative income after 10 years, 20 years and at the end of the sample (30 to 61 years, depending on data available).⁴

As shown in Table 1, the relative low-income trap is highly persistent: The probability of remaining trapped in the low-income range is 94 percent after 10 years (Panel A), 90 percent after 20 years (Panel B) and 80 percent in the entire observational period, 30 to 61 years (Panel C). Meanwhile, the effects of the relative middle-income trap are strong in the 10-year period (with a probability of remaining in the middle-income status of 80 percent and a 9 percent probability of regressing to low-income status), but dissipate in the longer term. Still, Panel C shows that more than half of the economies that had a middle-income status at the beginning of the sample remained at or below that relative income status (with a cumulative probability of 47 percent + 17 percent = 64 percent), indicating that these economies experienced a small probability

of relative convergence to higher levels of relative income even after having moderate absolute growth during the entire 30- to 61-year period.

In other words, the probability of escaping the middle-income trap is 11 percent after a 10-year period, 21 percent after a 20-year period and 36 percent after 30 to 61 years. Also interesting to note is that countries almost never degrade to low- or middle-income status once they have reached the high-income status: The probability of remaining at a high-income status is at least 97 percent.

Going back further in history, the general picture is not very different.⁵ Calculating the countries' transitions among relative income groups between 1870 and 2010, the low relative income trap is highly persistent even in the long run, and the probability of remaining in a middle-income trap is still substantial enough that it warrants a search for further explanations. (See Table 2.) These results also support our claim that both the relative low-income trap and the relative middle-income trap exist because the probability of transitioning from low income to middle income is only 5 percent and from middle to high income is only 18 percent—even in the very long run (140 years).

Explanations for Income Traps

The literature lacks systematic explanations for the lack of rapid convergence, especially the middle-income trap phenomenon. We discuss the theories that stand out, in our view, as the most prominent. The general theme underlying these theories is that there are barriers to technology spillovers and frictions in resource reallocation.

First, a developing country's local monopoly power can act as a barrier to new technology adoption and international capital flows. Interest groups in developing countries have little incentive to open up

NOTES FOR TABLES 1 AND 2: Each number represents the percent of economies that transitioned from a given relative income range at the beginning of the period (row headers) to the respective relative income range at the end of the period (column headers) during the period specified. For example, Panel A in Table 1 shows that between 1950 and 2011, a country with a relative income lower than 15 percent of that of the U.S. had a 94 percent probability of remaining in the relative low-income trap after 10 years, while a middle-income country had an 80 percent probability of remaining in the relative middle-income trap and a 9 percent probability of regressing to a low relative income status. In other words, the probability of escaping the low-income trap after 10 years was 6 percent and that of escaping the middle-income trap was 11 percent.

TABLE 1
Income Transition Probabilities between 1950 and 2011

A: 10-Year Transitions				
Starting Point		Ending Point		
		$\leq 15\%$	>15 to 50%	$>50\%$
Starting Point	$\leq 15\%$	0.94	0.06	0.00
	>15 to 50%	0.09	0.80	0.11
	$>50\%$	0.00	0.03	0.97

B: 20-Year Transitions				
Starting Point		Ending Point		
		$\leq 15\%$	>15 to 50%	$>50\%$
Starting Point	$\leq 15\%$	0.90	0.10	0.00
	>15 to 50%	0.14	0.65	0.21
	$>50\%$	0.00	0.03	0.97

C: Start-to-End Transitions (30 to 61 Years)				
Starting Point		Ending Point		
		$\leq 15\%$	>15 to 50%	$>50\%$
Starting Point	$\leq 15\%$	0.80	0.16	0.03
	>15 to 50%	0.17	0.47	0.36
	$>50\%$	0.00	0.00	1.00

SOURCES: Penn World Tables 8.0 and authors' calculations.

TABLE 2
Income Transition Probabilities between 1870 and 2010

A: 10-Year Transitions				
Starting Point		Ending Point		
		$\leq 15\%$	>15 to 50%	$>50\%$
Starting Point	$\leq 15\%$	0.94	0.06	0.00
	>15 to 50%	0.08	0.83	0.09
	$>50\%$	0.00	0.10	0.90

B: 20-Year Transitions				
Starting Point		Ending Point		
		$\leq 15\%$	>15 to 50%	$>50\%$
Starting Point	$\leq 15\%$	0.92	0.08	0.00
	>15 to 50%	0.13	0.75	0.12
	$>50\%$	0.00	0.12	0.88

C: Start-to-End Transitions (30 to 140 Years)				
Starting Point		Ending Point		
		$\leq 15\%$	>15 to 50%	$>50\%$
Starting Point	$\leq 15\%$	0.93	0.05	0.02
	>15 to 50%	0.31	0.51	0.18
	$>50\%$	0.00	0.17	0.83

SOURCES: Maddison Project (2013) and authors' calculations.

The Basics of the Solow Growth Model

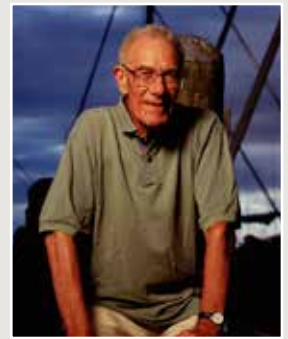
The neoclassical growth model of economist Robert Solow suggests that poor economies, starting with a lower capital stock, will be able to grow relatively faster than developed countries and eventually catch up with their income levels through capital accumulation and technological adoptions from the developed world. The key assumptions in the model are that there are diminishing returns to capital, that all countries have access to new technologies and that the savings rate is similar across countries in the long run. Because of a lower level of the initial capital stock in the

developing countries, the marginal product of capital is higher there, thus permitting a higher rate of return to investment and faster rate of income growth. Since technological progress, instead of capital accumulation, is the only driving force of long-run growth, convergence is achieved once the poor countries reach the same level of capital stock as that in the developed world.

However, if there are barriers to adopting new technologies, developing countries can fail to converge to the living standard of the developed world. The question is why such barriers exist. There is no direct answer.

For one thing, technology is not free; so, fixed investment is necessary for adopting new technologies.

The implication is that policies that help attract foreign direct investment and promote domestic saving and exports of manufactured goods are more likely to overcome the barriers of technology transfers, as the experiences of Mexico and Ireland showed.



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the domestic market and allow competition from foreign firms with more advanced technologies. There is empirical evidence to support this theory, but it does not explain why nations remain trapped in low- or middle-income levels even when they adopt policies to open domestic markets or when they enact radical economic reforms that lift barriers to international capital flows.

Both regional economic inequality and the failure or success stories of nations that have attempted industrialization could be explained by the specific development strategies and industrial policies adopted, rather than by the political institutions per se.

In fact, many nations have tried to attract foreign direct investment (FDI) but have not been very successful; even if they do attract FDI, they are still unsuccessful in climbing out of the income trap.⁶ For example, Mexico adopted financial liberalization in the 1970s, accumulating a large amount of debt. But when the U.S. hiked interest rates in the early 1980s, Mexico suffered a debt crisis, partly because of its lack of capital controls. As another example, Russia also adopted dramatic economic and political reforms to lift capital controls, starting in the early 1990s, but the result was a collapsing economy, not a reviving one.

A second popular theory to explain the income traps focuses on institutions. This theory proposes that poor nations fail to

develop because of bad political institutions, such as a dictatorship. Under bad political institutions, the elite class builds extractive economic institutions to expropriate profits from the grass-roots population. Hence, the rule of law and private property rights are not protected, and the private sector has little incentive to accumulate wealth and adopt new technologies to improve productivity.⁷

Notable examples of the institutional theory are the communist countries in Eastern Europe during the postwar period before their economic reform in the late 1980s and early 1990s, as well as today's North Korea.

The institutional economists also apply this theory to explain why the Industrial Revolution took place first in late 18th century England instead of in other parts of Europe. They argue that this was because England had the best political institutions in the world, thanks to the 1688 Glorious Revolution, which strengthened private property rights by restricting the British monarch's extractive power on the British economy.

However, the institutional theory's explanation of the Industrial Revolution based

on the notion of better private property rights has been criticized by many economic historians; they argue that private property rights and the rule of law in many countries outside England, such as 18th century China, were just as secure (or even more so) as those in England, yet the Industrial Revolution did not happen there.⁸

Furthermore, the institutional theory does not entirely explain the mechanism of economic development, and it is inadequate to explain instances such as Russia's dismal failure to grow after the shock therapy economic reform in the 1990s or China's miracle growth since 1978 under an authoritarian political regime. A similar case can be made about areas with identical political and economic institutions, such as the different counties within the American cities of St. Louis or Chicago, or the different parts of northern and southern Italy, where there are sharp contrasts of both pockets of extreme poverty and blocks of extreme wealth, both violent crime and obedience to the rule of law.

Instead, both regional economic inequality and the failure or success stories of nations that have attempted industrialization could be explained by the specific development strategies and industrial policies adopted, rather than by the political institutions per se.⁹ In what follows, we will use the experience of Mexico and Ireland to shed light on the middle-income trap.

The Cases of Ireland and Mexico

To further investigate the issue of why some countries have failed to climb the income ladder and others have succeeded, we dig deeper into the diverging cases of Ireland and Mexico. Both countries maintained a roughly similar level of development in terms of per capita income going back as early as the 1920s. However, each took dramatically different approaches to development in the postwar era, leading to the different outcomes seen, especially after the 1980s. This occurred despite both nations' adopting political democracy: Mexico in 1810 and Ireland in 1921.

Ireland's economy did not experience fast growth between the 1920s and the 1950s because of anticolonial policies based on the since-discredited strategy of import substitution industrialization. However, since the 1950s, Ireland used its state's capacity built in the previous period and adopted industrial policies to gradually open up to global markets to attract FDI, instead of fully liberalizing its capital markets at once. Moreover, special government agencies were created to guide and steer such foreign investment through preferential policies (subsidies) and proper regulations to nurture its manufacturing sector. Ireland also increased government spending on public education for all and adopted new tax, fiscal and monetary policies to control high government deficits and inflation; in addition, it promoted domestic investment and targeted its exports to Europe and the U.S.¹⁰

On the other hand, Mexico was a far more open economy than Ireland between the 1920s and 1970s, but Mexico lacked sufficient government effort and discipline to build its state capacity to steer the economy. Mexico's exposure to international oil markets as an oil exporter, as well as the rapid expansion of public debt in the 1970s, made the economy susceptible to more liquid short-term capital flows, instead of longer-term foreign investment. Its large government debt became very expensive after the interest rates in the U.S. were increased drastically to curb inflation, pushing the Mexican economy into default and prompting a large currency devaluation. Moreover, Mexico did not invest highly in education, nor did it establish government agencies to design industrial policies to promote

both foreign and domestic investment in areas consistent with Mexico's comparative advantages. Economic reform and nationalization of the banking system in the early 1980s prompted investors to look for financing outside of the banking system, changing the financial landscape and failing to stimulate industrial growth that would invigorate the economy.¹¹ Financial liberalization at the end of the 1980s, oil export-led growth and eventual debt restructuring helped stabilize the economy, though rapid economic growth did not return.

Comparing the divergent growth paths of Mexico and Ireland in the 20th century suggests that state capacity and industrial policies are critical in explaining the issue, rather than differences in political institutions or vast interests of local monopolies, per se. Unlike what the Solow growth model suggests, technology is embedded in tangible capital, which is most likely to originate from the manufacturing sector instead of the agricultural and natural resource sector or service sector. Hence, advanced technology only flows from developed nations into developing nations through costly fixed investment in manufacturing. Financial capital investors from developed countries are typically interested in short-term capital gains (especially in real estate and natural resources), not in the foreign nation's long-term development. Such types of capital flows should be controlled, instead of encouraged, by developing countries' governments. Thus, those nations that can find ways to grow their manufacturing sector through continuous investment and domestic savings are more capable of achieving technological and income convergence to the technology frontier of the world.¹² 

Yi Wen is an economist, and Maria Arias is a senior research associate, both at the Federal Reserve Bank of St. Louis. For more on Wen's work, see <https://research.stlouisfed.org/econ/wen>.

ENDNOTES

- ¹ See Solow for a theoretical description of the neo-classical growth model. More recently, economist Robert Barro presented the "iron law of convergence," suggesting poor countries can constantly reduce their income gap with the developed economies by half every 35 years.
- ² "Middle-income trap" is a term that was first used by economists Indermit Gill and Homi Kharas in 2007 in reference to countries that have maintained a middle-income status for decades without being able to reach high-income status.
- ³ The countries in Europe's periphery were strongly affected by the housing bubble burst and financial crisis during the late 2000s.
- ⁴ A similar analysis was done by Im and Rosenblatt. We calculated income relative to that of the U.S. using real GDP data at chained purchasing power parities (PPPs) from Penn World Table 8.0 for 107 countries that have a population larger than 1 million and at least 30 years of data between 1950 and 2011. We excluded Middle Eastern countries because most are oil-rich economies.
- ⁵ We repeated the procedure using income data from the Maddison Project, available since 1870 for 104 countries in our sample. U.S. income per capita was more than 75 percent of that of Great Britain in the 1870s; so, the U.S. was still a good representative of the developed world at the time.
- ⁶ See Parente and Prescott.
- ⁷ See Acemoglu and Robinson.
- ⁸ See Allen.
- ⁹ See Wen.
- ¹⁰ For a report on Ireland's development process, see heritage.org/research/worldwidefreedom/bg1945.cfm.
- ¹¹ See research.stlouisfed.org/publications/review/07/09/HernandezMurillo.pdf.
- ¹² For example, Wen analyzes China's growth miracle.

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Recovery from the Great Recession Has Varied around the World

By Maria A. Arias and Yi Wen



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Since the Great Recession and the subsequent global financial crisis, world output has grown moderately, yet the path of economic recovery has been fragile and uneven. Several countries have grown continuously since the end of 2008; for example, the U.S. and China grew by 12 percent and 65 percent, respectively, between the fourth quarter of 2008 and the fourth quarter of 2014. Yet others, such as Italy and Greece, have seen their economies grow and then

Recession around the world. We grouped 165 countries into broad geographical regions and then looked at how each region's GDP grew (or shrank) during the recession and since then.³ (See the table.)

The regions that experienced the largest declines in aggregate GDP in the recession period were Europe and the Middle East, where the declines in total GDP ranged from 10 percent to 20 percent. Latin America was also greatly affected by the

highlighting some of the trends seen in the table. (Removing long-term growth lets us identify the direct effects of the recession on regional GDP.) The Asian Tigers (Hong Kong, Singapore, South Korea and Taiwan) together with Japan and China, for example, have seen continuous substantial growth without experiencing a sharp decline in GDP growth during the recession period. Both Latin America and North America have grown past their prerecession peaks, though output in Latin America has not grown above the long-term trend since 2011. Most strikingly, Europe has not recovered from the crisis and has shown almost no growth since 2012, with output still below its prerecession peak.

Why was Europe so heavily affected by the Great Recession and financial crisis? Why did it take so long for North America to recover? What explains strong growth in Latin America until 2012 and the stall in its output since?

Connecting the Dots

The crisis started in the U.S. financial sector (the subprime mortgage market) and propagated to the entire financial system through mortgage-backed securities and highly leveraged debt structures; so, the crisis infected the global economy through the international financial networks. Hence, those nations with an advanced and open financial system (such as Europe) got hit directly and most severely by the shock, whereas those less connected to the international financial system or with less-sophisticated financial structures got hit only indirectly through the link of international trade. Empirical evidence shows that the financial crisis caused the greatest

The IMF expects economic growth in developing economies to slow down and growth in advanced economies to strengthen, with risks to global growth—such as financial market volatility and low commodity prices—remaining on the horizon.

shrink again, with their total gross domestic product (GDP) declining by 6 percent and 24 percent, respectively, since the recession started.¹

The recovery continues to look weak. According to the International Monetary Fund (IMF), global output growth is projected to be 3.3 percent this year, slightly lower than last year. The IMF expects economic growth in developing economies to slow down and growth in advanced economies to strengthen, with risks to global growth—such as financial market volatility and low commodity prices—remaining on the horizon.²

Exploring Regional Outcomes

For this article, we used data from the IMF's World Economic Outlook (WEO) database to explore the effect of the Great

downturn, with GDP falling by almost 8 percent, followed by Oceania, North America and Africa. It is interesting to note that output in Asia did not decline at all during the recession—growth merely slowed to an average of 5 percent, despite a sharp drop in exports.

Mirroring the performance during the recession, the regions that grew the most since 2009 were Asia and Africa; in both regions, GDP grew by about 50 percent. The region to grow the least was Europe, with GDP growing by just below 10 percent on average, followed by North America, where average growth was just above 20 percent since 2009.

The figure shows aggregate GDP growth in several regions since 2008 after having removed the long-term trend growth (average growth between 1980 and 2008),

Aggregate Cumulative GDP Growth (2008-2014)

	2008 to 2009	2009 to 2014
Africa	-2.49%	52.87%
Asia (excluding Tigers, Japan, China)	4.37%	54.18%
Asian Tigers (plus Japan and China)	5.47%	48.13%
Eastern Europe	-20.80%	37.59%
Europe (excluding Eastern Europe)	-10.18%	9.65%
Latin America	-7.90%	42.44%
Middle East	-11.29%	48.31%
North America	-2.90%	21.65%
Oceania	-5.90%	47.00%

SOURCES: World Economic Outlook (July 2015) and authors' calculations.

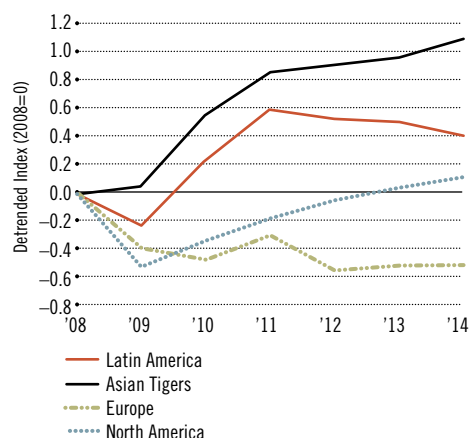
NOTE: China and Japan are included among the Asian Tigers to separate them from the smaller economies in Asia. The Asian Tigers are Hong Kong, Singapore, South Korea and Taiwan.

international trade collapse since the Great Depression.⁴ Hence, areas that rely heavily on oil, or exports of goods or raw materials—areas such as Russia and the Middle East—saw big drops in GDP.

Getting hit hard was the first blow; an onerous recovery period was the second for many areas of the world. The biggest puzzle is that the advanced or industrialized regions (for example, the U.S. and Europe) had the slowest pace of recovery. One plausible explanation is that it is harder to recover from a severe financial shock if it triggers a debt crisis (as in Europe). Another explanation is that monetary policies (such as quantitative easing) were ineffective or much less effective than fiscal policies in ending the Great Recession.⁵

Europe as a whole did not adopt strict fiscal stimulus programs during the Great Recession. Hence, the most long-lasting effects from the downturn were suffered by this region, particularly the nations where fiscal ability was limited due to the government debt crisis. In contrast, the U.S. initiated several fiscal stimulus packages, but they failed to stimulate job creation and infrastructure buildup because they were focused on consumer transfer programs instead. Although the U.S. performed better than Europe, the U.S. was not the best performer. China, on the other hand, not only adopted a serious fiscal stimulus

GDP Growth by Region



SOURCES: World Economic Outlook (July 2015) and authors' calculations.

NOTE: Trend growth calculated using data between 1980 and 2008.

package but was also successful in spurring job creation and infrastructure buildup; as a result, it recovered the fastest.⁶

Because of China's rapid and strong recovery, regions that exported in large volumes to China (such as Southeast Asia) or that supplied raw materials to power China's industrial engine (such as Africa, Australia, the Middle East and Latin America) also recovered reasonably well from the crisis.⁷ However, when China started to experience a series of structural changes in 2011 (the so-called new norm), its long-run growth rate declined from its long-run average of 10 percent in early 2011 to 7 percent in 2014. Consequently, nations that relied on trade with China, particularly meeting its demand for raw materials and oil, also experienced economic slowdowns. Indeed, imports of goods from Latin America and Oceania to China slowed and stagnated after increasing at a constant pace between 2009 and 2010. This decline in trade flows might help explain the slower pace of growth in Latin America and Oceania since 2012. ⁹

Yi Wen is an economist, and Maria Arias is a senior research associate, both at the Federal Reserve Bank of St. Louis. For more on Wen's work, see <https://research.stlouisfed.org/econ/wen>.

ENDNOTES

- ¹ In this article, we divided the 2008-2014 period into two subperiods: the recession period of 2008-2009 and the recovery period of 2009-2014. Since we used annual data aggregated by region, we considered the Great Recession to span 2008-2009 even though the National Bureau of Economic Research said the recession in the U.S. started in December 2007 and ended in June 2009.
- ² See the World Economic Outlook update of July 2015 at www.imf.org/external/pubs/ft/weo/2015/update/02/.
- ³ The World Economic Outlook database is available on the International Monetary Fund's website at www.imf.org/external/ns/cs.aspx?id=29. When dividing the Asian countries, China and Japan were included among the Asian Tigers to separate them from the smaller economies in Asia.
- ⁴ Jiao and Wen further discuss this trade collapse.
- ⁵ Eggertsson and Krugman provide further insight on the effectiveness of quantitative easing, as do Wen and Wu.
- ⁶ See Wen and Wu.
- ⁷ According to the IMF's estimation of world output, China contributed about 12 percent of global output in 2008 (in current international dollars) and about 50 percent of global growth during the Great Recession. See www.voxeu.org/article/can-china-be-world-s-growth-engine.

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Aging and the Economy: The Japanese Experience

By Maria E. Canon, Marianna Kudlyak and Marisa Reed



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As the population of the world's developed economies grows older, the causal effect of aging on the macroeconomy is bound to land at the top of academic and policy research agendas.

This effect can be seen most clearly through the lens of labor markets. In the U.S., aging features prominently in the debate on causes of the declining labor force participation rate.¹ Also, labor market "fluidity," or the flows of jobs and workers across employers, has decreased partly in response to an aging population.² Similarly, the decline in the business startup rate in the U.S. over the past 30 years has been largely attributed to an aging workforce.³ Some have also questioned whether aging of the population is a cause of the low inflation in the U.S. since the 2007-09 recession.

Some have also questioned whether aging of the population is a cause of the low inflation in the U.S. since the 2007-09 recession.

Since the average age of Japan's population is older than that of most other developed countries, Japan provides a laboratory for studying the causal effects of aging. In Japan, the ratio of the population older than 64 to the population between 15 and 64 has increased since 1990 at a steady pace, while inflation and output have fallen over the same time.⁴ Because of these demographics, a new wave of research papers has emerged on a potential causal effect of aging on the economy.

In this article, we provide an overview of selected works on the effect of aging on inflation in Japan. We then look into whether the Japanese experience provides an expectation for causality between aging

and low inflation in the U.S. by reviewing recent cross-country evidence.

Aging and Deflation: Japan's Experience

A population's average age can be shifted upward by two mechanisms: a decline in fertility (which eventually decreases the number of those potentially entering the labor force) and an increase in longevity (which increases the share of older workers in the population). Japan has experienced a marked decline in fertility since 1950-1955, when the fertility rate was 2.75 births per woman; for the past 40 years, the rate has been below two births per woman. (See Figure 1.) Simultaneously, Japan has experienced increases in longevity (see Figure 2), which have produced not only an older population but an older workforce, relative to other advanced economies, as

older workers remain healthy and delay retirement. Since Japan has experienced both types of shifts in recent decades, it has a growing population of older workers, as well as a shrinking population of younger workers due to the decrease in fertility. (See Figure 3.)

Economists Mitsuru Katagiri, Hideki Konishi and Kozo Ueda* argued in a recent study that aging of the population, depending on the cause, has contrasting effects on inflation. The authors said that aging is deflationary when caused by an increase in longevity but inflationary when caused by a decline in birth rates. A falling birth rate implies a smaller tax base, which might prompt the government to allow the inflation rate to rise in order to erode its debt and

stay solvent. In contrast, increased longevity causes the ranks of pensioners to swell and their political power to increase, leading to tighter monetary policy to prevent inflation from eroding savings. Using a model, the authors concluded that the deflationary effect of higher longevity dominates.

Another study, by economists James Bullard, Carlos Garriga and Christopher Waller, looked at the effect of demographics on the optimal inflation rate. The authors noted that young cohorts, because they have no assets and wages are their main source of income, prefer relatively high inflation. Older workers, instead, work less and depend on the return of their assets; therefore, they prefer low inflation rates. When older cohorts have more influence on redistributive policy, the economy has relatively low inflation.

In a third study, economists Derek Anderson, Dennis Botman and Ben Hunt found that the increased number of pensioners in Japan led to a sell-off of financial assets by retirees, who needed the money to cover expenses. The assets were mostly invested in foreign bonds and stocks. The sell-off, in turn, fueled appreciation of the yen, lowering costs of imports and leading to deflation.


Finally, economists Shigeru Fujita and Ippei Fujiwara looked for a causal link between an aging of the working-age population and inflation. The authors developed a model with human capital depreciation; as workers separate from their jobs, they lose their human capital and become less productive. The authors examined the effect of a decline in fertility. Initially, the increase in the share of older and, thus, more-experienced workers in the labor force led to increased output and inflation. However, as the share of older workers increased, the

decline in fertility eventually reduced the entry into the labor force of younger workers, leading to negative labor force growth. Deflation resulted. When the model was subject to a significant decline in fertility, such as the one experienced in Japan in the early 1970s, the mechanism in the model led to prolonged deflation.

Aging and Deflation: Elsewhere

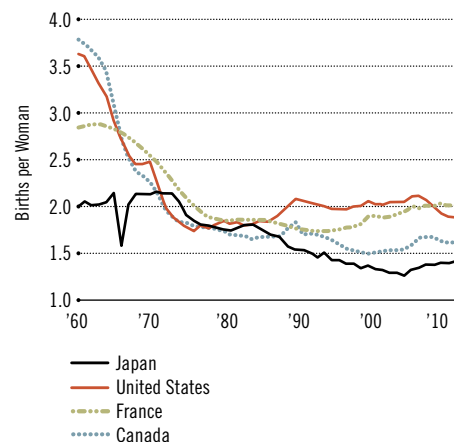
The U.S. and many other developed countries have seen their populations grow older in recent decades.⁵ To get some idea of whether the persistent deflation experienced by Japan is an inevitable outcome for the U.S. as it continues to age, we looked at cross-country evidence.

A study from earlier this year by economists Mikael Juselius and Elod Takats examined the relationship between aging and inflation in a panel of 22 advanced economies, spanning 1955–2010. The authors found a stable and significant correlation between the age structure of a population and inflation. However, the correlation contrasts with the Japanese experience. In particular, a larger share of dependents (both young and old) was correlated with higher inflation in that study, while a larger share of the working-age population was correlated with deflation (excess supply and deflationary bias). The authors found that the correlation between inflation and the dependency ratio (young and old populations divided by working-age population) was weakest for Japan, indicating that its experience might not provide a predictive model for other economies.

As the advanced economies age, the effect of aging on the macroeconomy becomes an important topic for academic and policy research. Studying the link between aging and the macroeconomy requires taking into account the decline in fertility, as well as the increase in longevity. Further research is needed to determine the applicability of Japan's experiences to the U.S. economy because of the differences in labor markets, policies and institutions. 

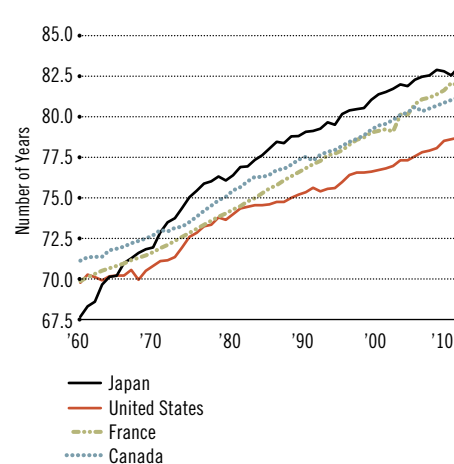
Maria E. Canon is an economist at the Federal Reserve Bank of St. Louis. Marianna Kudlyak is an economist at the Federal Reserve Bank of Richmond, and Marisa Reed is a research associate there. For more on Canon's work, see <https://research.stlouisfed.org/econ/canon>.

FIGURE 1
Fertility Rates



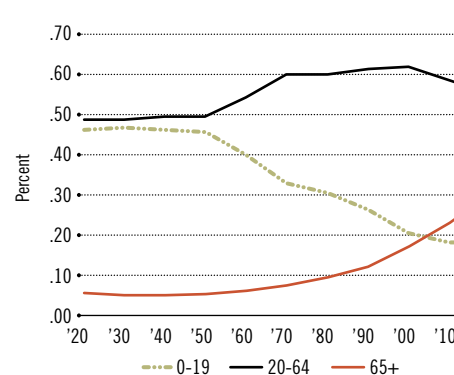
SOURCE: Federal Reserve Economic Data (FRED).

FIGURE 2
Life Expectancy at Birth



SOURCE: FRED.

FIGURE 3
Population Share in Japan, by Age



SOURCE: Authors' calculations, using data from Statistical Survey Department, Statistics Bureau, Ministry of Internal Affairs and Communications, Japan. See www.stat.go.jp/english/data/nenkan/1431-02.htm.

ENDNOTES

- 1 See, for example, Canon, Debbaut and Kudlyak.
- 2 See Davis and Haltiwanger for more detailed data.
- 3 See Karahan, Pugsley and Sahin for an extensive analysis.
- 4 See Sánchez and Yurdagul.
- 5 The fertility rates in the U.S. and Japan have dropped over the past 50 years, and other advanced economies have followed similar patterns. (See, for example, Canada and France in Figure 1.) Like Japan, the U.S. has experienced increases in longevity, albeit somewhat lagging the Japanese experience (Figure 2). In 1960, life expectancy in the U.S. was 69.77 years and was 67.67 in Japan; in 2010, those numbers were 78.74 and 83.33.

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* Correction: The study mentioned in this sentence was initially credited incorrectly to another group of researchers.

Stimulus Spending Had Spillover Effects, Thanks to Commuters

By Bill Dupor



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In response to the most recent recession, the U.S. government enacted its largest fiscal stimulus since President Franklin Delano Roosevelt's New Deal in the wake of the Great Depression. The law, the American Recovery and Reinvestment Act of 2009 (ARRA), had a total budget impact of \$840 billion. The apportionments consisted of tax relief, spending on transfer programs such as unemployment insurance benefits, and government spending on goods and services. According to one study, this third category constituted \$350 billion of the ARRA.¹

effect because these workers use their additional income to buy more consumer goods, leading to even more output and hours worked. The multiplier effect doesn't stop there. Firms that produce these consumer goods, in turn, put more wage income into the hands of other workers, and the process continues. The process is known as the "government spending multiplier."

Although posited as a theory, whether this stimulus mechanism operates in reality has been a hard question for economists to answer.² The main stumbling block is lack

spending are likely to return to their home county and purchase additional local goods and services in their county of residence. Through this process, government spending is likely to propagate itself geographically through commuter flows.

Using U.S. Census Journey to Work data, McCrory and I organized the U.S. into roughly 1,300 distinct local labor markets, or regions. We then partitioned each of these regions into two subregions. The first is a large subregion, which is the largest county in the region, and the second is a satellite subregion, made up of the combination of the remaining counties within the region. On the figure, I plotted the map of Pennsylvania, one of the states used in our study. Any contiguous mapping of a single color represents a specific regional market, with the large county subregion represented by a darker tone. Black ovals indicate cities in Pennsylvania; the size of the oval is proportional to the city's population.⁴

We then asked: How does government spending in one subregion affect its own economic activity, as well as that of its partner subregion? We measured economic activity by each subregion's employment level and wage bill (total amount paid to workers).⁵ We refer to the effect of spending within a subregion as the "direct effect"; the spending occurring in the neighboring subregion is referred to as the "spillover effect."

We estimated the direct effect by comparing the employment and wage bill outcomes of subregions receiving a large amount of ARRA spending to the employment and wage bill outcomes of subregions receiving little ARRA spending. We estimated the spillover effect by comparing the employment and wage bill outcomes of subregions

The spending component included, for example, money for public school salaries, green technology, highways, railroads, city buses, local law enforcement, water quality improvement, basic scientific research, federal government vehicle procurement and new facilities for the National Institutes of Health.

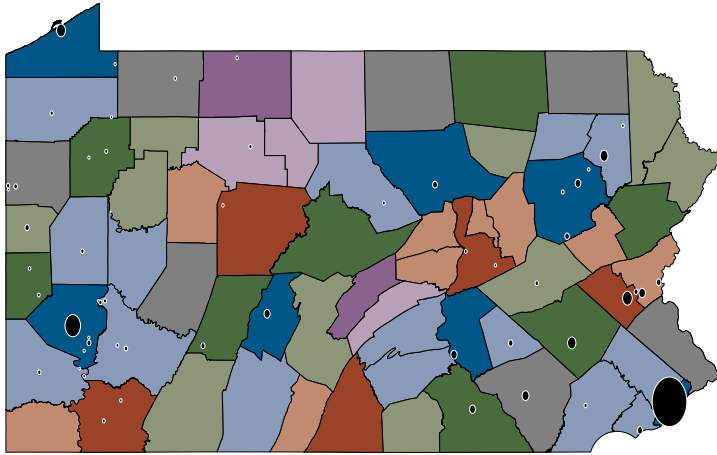
The spending component included, for example, money for public school salaries, green technology, highways, railroads, city buses, local law enforcement, water quality improvement, basic scientific research, federal government vehicle procurement and new facilities for the National Institutes of Health. In all, more than 30 federal agencies and departments helped distribute ARRA funds.

Some macroeconomists argue that, at least in theory, government spending is a particularly effective way to combat recessions. The immediate impact of a government purchase is to increase gross domestic product (GDP) and hours worked directly because government spending is one component of GDP. According to the theory, with more income in workers' hands, there is a second-round

of data. Here is where the ARRA comes in. The ARRA legislated the collection of data on spending, which is usually highly disaggregated. The recipients of every grant, contract and loan were required to file quarterly reports that contained ZIP code-level records of dollar amounts (among other information).

Peter McCrory, a Ph.D. student in economics at the University of California–Berkeley and former Federal Reserve Bank of St. Louis research analyst, and I used this ARRA data to study the multiplier effect empirically.³ Our starting point is the observation that roughly one-third of workers in a typical county are employed outside of their county of residence. Commuters working in one county who earn income based on government stimulus

Determining How the Stimulus Money Spread



SOURCES: Dupor and McCrory, and the Census Bureau.

NOTE: To determine whether the federal government's recent stimulus spending program had a spillover effect (spilling over from the county where the money was sent to adjoining areas), one of the first steps was to break the United States down into 1,300 local labor markets. The map of Pennsylvania is an example of the sort of portioning that occurred. Each color represents a specific regional market, with the largest county in the region represented by a darker tone of the color and secondary counties in the same region represented by a lighter tone of the same color. A gray-colored county represents either a single-county region or a county associated with a larger region that is anchored outside of the state. Black ovals indicate cities; the size of the oval is proportional to the city's population.

that have neighboring subregions with generous ARRA allocations to subregions with neighbors that received few ARRA dollars.⁶


We found substantial direct and spillover effects within regions interconnected by commuter flows. Stimulus spending in one county increased employment and wage payments in places two to three counties away, as long as the areas were sufficiently connected, as measured by commuting patterns.

One dollar of ARRA spending in a subregion increased wage payments in that subregion by \$0.64 and increased wage payments in the neighboring subregion by \$0.50. Thus, combining both the direct and spillover effects, there is a greater than one-for-one increase in the wage bill with respect to an increase in the stimulus spending.

We found similar effects when we replaced the wage bill with the employment level as our economic activity measure. During the first two years following the ARRA's enactment, \$1 million of stimulus in one part of a local labor market increased employment by 10.3 persons and increased employment in the rest of the local labor market by 8.5 persons.⁷

Besides providing evidence in favor of a government spending multiplier, our results should provide caution to other researchers, as well as to policymakers. Failing to

take into account positive spillovers could lead policymakers to underestimate the total social benefit of government fiscal intervention.

Research on fiscal policy spillovers is far from complete. In particular, there are other potential spillovers besides those given by geographic proximity. For example, another spillover may arise because the location of government spending may not coincide with the place at which the taxes to cover that spending will be paid. Suppose that New Jersey residents pay a larger share of the federal tax bill relative to residents of other states. Stimulus spending in another state could have a negative spillover effect on New Jersey even if the two states are far apart geographically. This could occur if citizens in New Jersey reduce investment in anticipation of higher future taxes that will need to be paid to finance the out-of-state stimulus. 

Bill Dupor is an economist at the Federal Reserve Bank of St. Louis. For more on his work, see <https://research.stlouisfed.org/econ/dupor>.

ENDNOTES

- ¹ See Drautzburg and Uhlig.
- ² The Keynesian multiplier theory itself has a few problems. Most notably, government spending today that is financed by deficits likely implies higher future taxes. Foreseeing higher future taxes, households may cut consumer spending today, which may partly or fully offset the expansionary effects of the government spending.
- ³ See Dupor and McCrory.
- ⁴ In the figure, a gray-colored county represents either a single-county region or a county belonging to a subregion where the large county subregion lies outside of Pennsylvania.
- ⁵ Data on GDP and its components are not available at the county level.
- ⁶ In constructing these estimates, we implemented two econometric adjustment procedures. First, we controlled for additional subregion-specific differences, such as prerecession employment and wage trends. Second, we used instrumental variables to correct for the possibility that ARRA allocations were made to subregions that were hit hardest by the recession.
- ⁷ In this study, one job refers to one job-year, that is, one year of employment for a person.

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Jonesboro Outperforming Arkansas and Nation in Some Key Categories

By Charles S. Gascon and Michael Pakko

Across Arkansas, there are eight metropolitan statistical areas (MSAs). One of the strongest in recent years has been that of Jonesboro, located in the northeastern region. With its diverse industry mix, hospitals, state university and national retail chains, Jonesboro serves as an economic hub for this corner of the state.

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Harvesting rice is not an unusual sight in the Jonesboro area—or anywhere in Arkansas, the top rice-producing state. Agriculture, in general, is an important driver in the area's economy and, thus, has drawn major food processors to the Jonesboro MSA.

Economic growth and population growth have gone hand in hand in the Jonesboro region. After growing relatively slowly during the 1970s and 1980s, Jonesboro's population has expanded faster than has the rest of Arkansas' over the past couple of decades. Population growth has been supported by robust job growth and economic development, with new retail making Jonesboro a retail anchor for northeastern Arkansas. With new malls, shopping centers and restaurants opening at a dizzying pace, some areas of Jonesboro are nearly unrecognizable from what they looked like just a few years ago. Although many parts of the nation have struggled in the aftermath of the Great Recession, this region has generally thrived.

"Jonesboro is the trade center of this region and attracts business from a wide radius."

—Jonesboro-area insurance agent

The resilience of the Jonesboro economy is illustrated clearly in the chart comparing payroll employment for Jonesboro, Arkansas and the U.S. From the onset of the

Anecdotal information in this report was obtained from surveys and interviews with local business contacts in Jonesboro conducted by the authors. The anecdotes should be interpreted with caution because the sample may not accurately reflect the industrial composition of the local economy. Some quotes were lightly edited to improve readability.

recession in December 2007 through the national employment trough of February 2010, the cumulative decline in payroll employment in Jonesboro was only 2.0 percent, compared with 4.8 percent for the state of Arkansas and 6.3 percent for the nation.

Evidence of stability can be seen in the regional housing market. The nation experienced a housing price boom from 2000 through 2006, with the average house price essentially doubling. In Jonesboro, however, housing prices increased a modest 22 percent. During the subsequent housing collapse, national prices lost about half of the 2000-2006 gains, while prices in Jonesboro remained stable.

Although manufacturing has recently shown relatively weak growth both nationwide and statewide, even that sector has shown resilience in Jonesboro. In part, this is due to the area's historic importance of agriculture, which, in turn, has drawn food processors to the area. The region has long benefited from the presence of Riceland Foods. Frito-Lay has a major manufacturing facility here, too. Consumer-products manufacturer Unilever joined the mix not too

"Food processing and agriculture seem to weather almost every downturn in the economy. We are blessed with an abundance of both."

—Jonesboro-area broadcaster

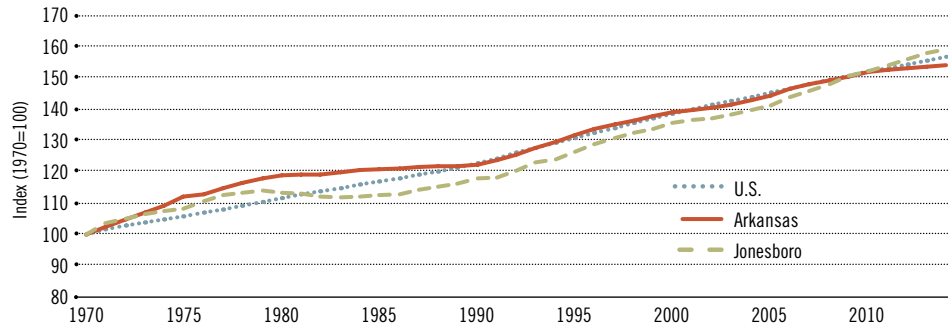
long ago. From 2009 to 2013, manufacturing output increased 14.9 percent in Jonesboro, compared with 11.3 percent statewide.

Diverse Employers

Because Jonesboro is the home of a major state university, employment in the area is partly buffered from cyclical downturns

FIGURE 1

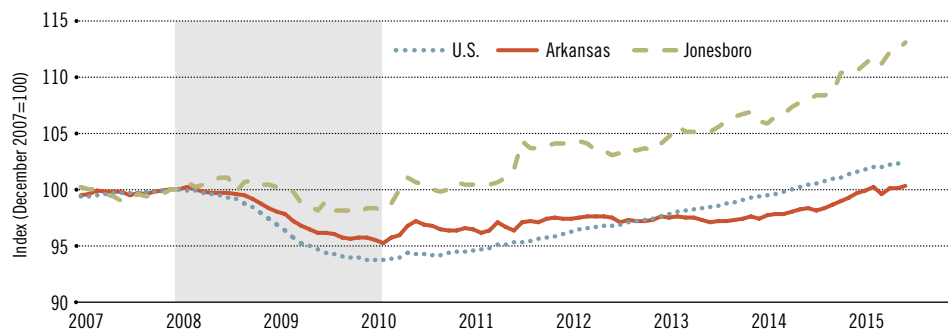
Population



SOURCE: U.S. Census Bureau.

FIGURE 2

Payroll Employment

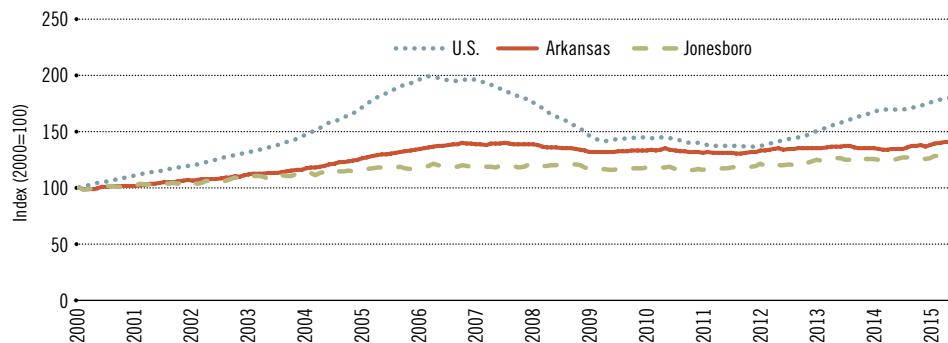


SOURCE: U.S. Bureau of Labor Statistics.

NOTE: The shaded area represents the unofficial employment recession, December 2007 to February 2010.

FIGURE 3

House Prices



SOURCE: Core Logic

(since college enrollments tend to rise during recessions). With more than 2,000 employees, Arkansas State University is the region's second-largest employer. The university is a much-needed source by business for skilled workers. Its presence also brings cultural and entertainment opportunities that are uncommon for metropolitan areas

of Jonesboro's size (about 126,000 people).

Jonesboro also has a high concentration of workers in health care, a sector that does not generally follow the business cycle. St. Bernards Healthcare and NEA Baptist Health System are two of the region's largest employers, with about 4,000 employees combined. Other health care-related companies employ



© ANDREW FERGUSON, ARKANSAS STATE UNIVERSITY

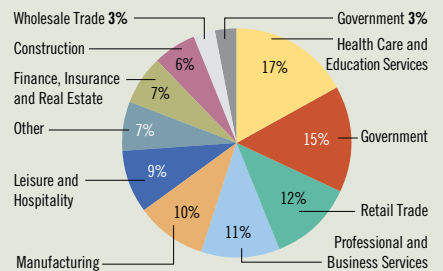
With nearly 2,500 employees, Arkansas State University is the second-largest employer in the area.

MSA Snapshot

Jonesboro, Ark.

Population (2014)	126,764
Population Growth (2014)	0.7%
Employment Growth (2014)	2.4%
Population (Age 25+)	
with Bachelor's Degree or Higher	21.1%
Population in Poverty	20.9%
Per Capita Income	\$35,014
Unemployment Rate	5.0%
Real GDP (2013)	\$4.5 billion
Annual Growth (2013)	0.6%

2014 Employment by Major Sector



SOURCE: U.S. Bureau of Economic Analysis.

Largest Employers

1. St. Bernards Healthcare	2,969
2. Arkansas State University	2,435
3. NEA Baptist Health System	1,030
4. Wal-Mart Super Centers	775
5. Hytrol Conveyor Co.	750

SOURCE: Jonesboro Regional Chamber of Commerce, 2014 Major Employers Guide.



© ST. BERNARDS HEALTHCARE WWW.STBERNARDS.INFO

As in many other areas, the health care sector is a major employer in Jonesboro. St. Bernards Healthcare (above) employs nearly 3,000 people by itself, making it the largest employer in the MSA. Another major health system and many other health-related companies employ about 8,000 additional people.



© JONESBORO REGIONAL CHAMBER OF COMMERCE

ABOVE: Highways are being widened and otherwise improved to ease access to Jonesboro, which historically has been somewhat off the beaten path. Better access to Memphis (to the southeast) and Little Rock (to the southwest) is expected to result in additional development in the Jonesboro area.

RIGHT: New retail is opening at a dizzying pace, making some areas of Jonesboro nearly unrecognizable from just a few years ago.



© JONESBORO REGIONAL CHAMBER OF COMMERCE

about 7,000 additional people. All totaled, nearly one in four private-sector workers are employed in health care or social assistance (day care, personal aides, social workers and the like). With the “baby boom” generation at retirement age, health service has been a growth industry for several years—a trend that is expected to continue.

Strong Recovery

Even more impressive than the region’s stability during the recession has been its growth during the recovery. Relative to pre-recession levels, employment in Jonesboro is up

“Jonesboro may not be recession-proof, but it is recession-resistant.”

—Mark Young, president and CEO of the Jonesboro Chamber of Commerce

13 percent, compared with only 0.3 percent for Arkansas and 2.5 percent for the nation. Jonesboro has outperformed the state by other measures, as well. From 2009 through 2013, growth in real gross domestic product (GDP) in Jonesboro averaged 2.3 percent, compared with 2.1 percent for Arkansas. Over the same period, real personal income growth in Jonesboro averaged 2.8 percent, compared with 2.2 percent for Arkansas.

Despite the steady gains in income, average income per capita in Jonesboro is about \$35,000, which is well below the national average of \$46,000 and slightly below the Arkansas average of \$37,000. Although income remains lower in Jonesboro, so is the cost of living: 18 percent below the national average. (The state’s average cost of living is 12.5 percent below the nation’s.) Adjusting for cost of living implies a “real” income of about \$42,000 in both Jonesboro and statewide.

Outlook

Looking forward, prospects for further economic growth and development are positive. Of the more than 90 businesses that responded to our survey, half noted that their sales since Jan. 1 were higher than one year earlier. Only five contacts reported lower sales, and just three respondents expected local economic conditions to worsen during the remainder of this year.

ECONOMY AT A GLANCE

One important factor is the recent enhancement of transportation infrastructure. Jonesboro has historically been somewhat off the beaten path when it comes to highway access. The recent expansion of U.S. 63—which will soon have the designation of Interstate 555—has provided better access to Memphis to the southeast. And the widening of a state highway will soon provide four-lane access to the southwest, to Little Rock and beyond. These developments have been spurred by economic growth in the area and will serve as catalysts for additional growth in the future.

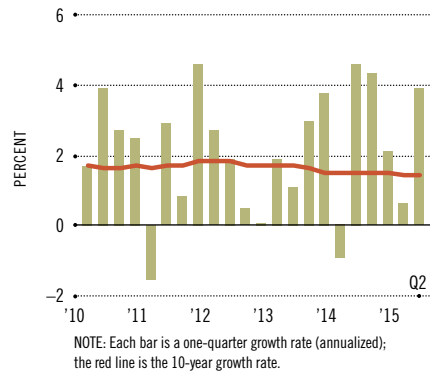
Ongoing economic growth is not without challenges. Many businesses said they had problems finding qualified workers. Despite the presence of the state university, only about 21 percent of the population 25 and older has a college degree, which is below the national average of 28.8 percent. Educational attainment is notably below that in the Fayetteville MSA in Northwest Arkansas, where almost 45 percent of the population has a college degree.

In a rapidly growing economy, keeping up with infrastructure development can be problematic. An increasing population requires additional housing, schools, roads and other public services. These are challenges that a region in economic decline would probably welcome, but they are challenges, nonetheless, even for a thriving region. Ω

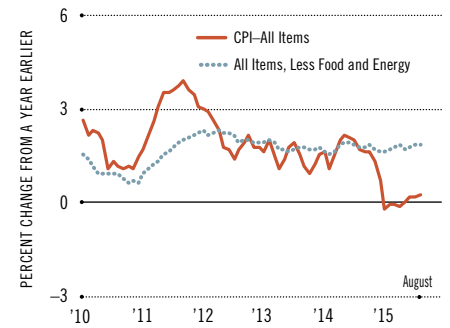
Charles S. Gascon is a regional economist at the Federal Reserve Bank of St. Louis. For more on his work, see <https://research.stlouisfed.org/econ/gascon>. Michael Pakko is an economist at the University of Arkansas at Little Rock.

Eleven more charts are available on the web version of this issue. Among the areas they cover are agriculture, commercial banking, housing permits, income and jobs. Much of the data are specific to the Eighth District. To see these charts, go to www.stlouisfed.org/economyataglance.

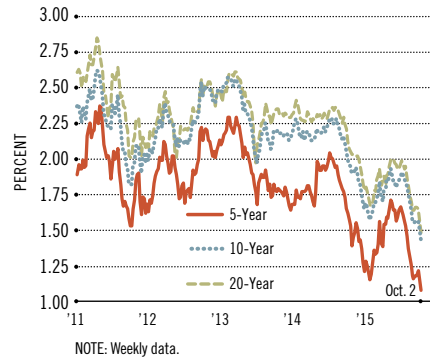
REAL GDP GROWTH



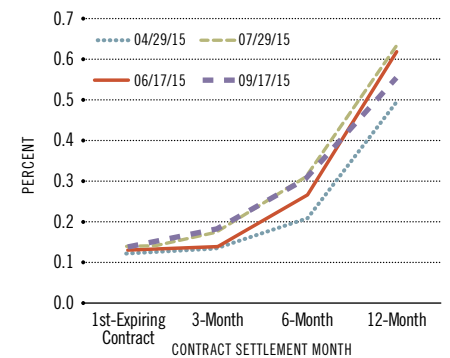
CONSUMER PRICE INDEX (CPI)



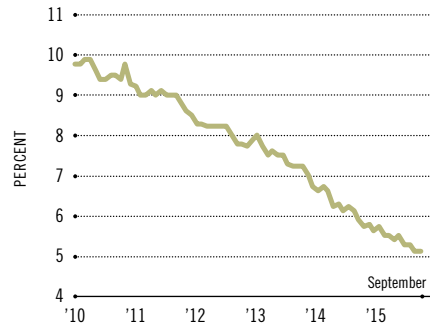
INFLATION-INDEXED TREASURY YIELD SPREADS



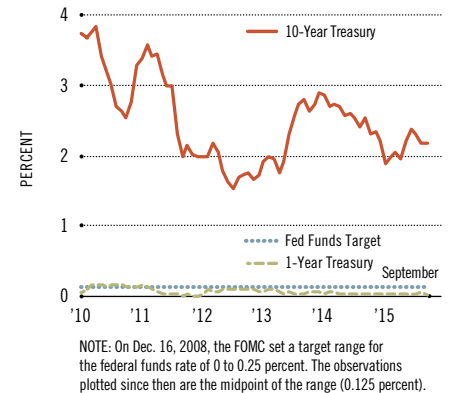
RATES ON FEDERAL FUNDS FUTURES ON SELECTED DATES



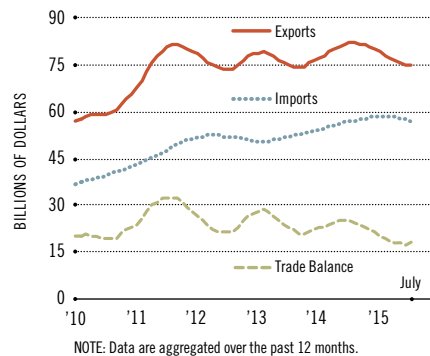
CIVILIAN UNEMPLOYMENT RATE



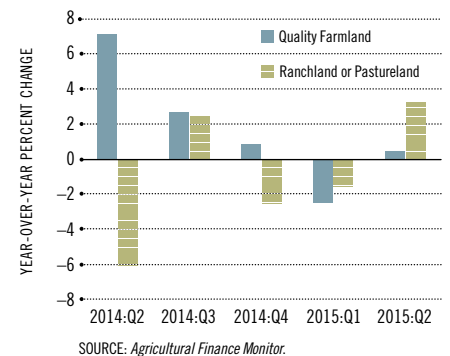
INTEREST RATES



U.S. AGRICULTURAL TRADE



AVERAGE LAND VALUES ACROSS THE EIGHTH DISTRICT



"Leaving the Nest" Is Easier in Arkansas than Elsewhere in the District and Nation

By Maria E. Canon and Charles S. Gascon



Reports on the millennial generation¹ continue to suggest that changes in household formation and economic dynamics during the past decade may be more than prolonged effects from the Great Recession. Millennials who are overwhelmed with student debt, weak job prospects and an uncertain housing market are often moving back in with their parents or other family members. Those who do “leave the nest” and don’t return to it struggle to afford the down payment on a house; their rents are rising, making homeownership increasingly unattainable. The result is a lack of first-time homebuyers, which restrains the recovery in the housing market and, thus, overall economic growth.

The first column in the table shows the percentage of 25-year-olds who live with parents or older relatives (henceforth “parents”); the percentages are given for the nation and for the states in the Eighth District.² Nationally, almost half of 25-year-olds

lived with their parents in 2012-13, up from more than a quarter in 1999. Among the District states, the rates of parental co-residence were typically lower than the national average; however, the growth since 1999 has been quite similar. Nationally, the highest levels of co-residence were typically in the northeastern states.

In this article, we review some of the literature on millennials’ moving back home and focus on the relevant statistics for labor markets, housing markets and student debt for the seven states in the Fed’s Eighth District and for the nation as a whole.

Labor Market

As economist Jaison Abel and co-authors pointed out, individuals at the beginning of their careers often need more time to transition into the labor market. Unemployment rates of those between 21 and 27 reflect this fact. (See “Unemployment Rate, Youth” in the table.) The unemployment

rate for these people is generally above the rates for potential workers of all ages. Among the states in the District, the youth unemployment rates are the lowest in Missouri and highest in Mississippi.

Earning a college degree does help labor market outcomes, and young adults with a college degree are more likely to live independently.³ Their lower unemployment rate, however, does not fully capture the labor market for recent graduates. Abel and co-authors noted that during the recession the *underemployment rate* for recent graduates was about 40 percent, which means close to half of recent graduates were working in jobs that did not require a degree. An implication is that a significant portion of recent graduates were earning lower wages than what they should have been, given their education.

Economist Philip Oreopoulos and co-authors found that those “unlucky graduates” who enter the job market during

Economic Factors Driving Youth to Live with Their Parents

	Percentage of 25-Year-Olds Living with Parents	Unemployment Rate, All Workers	Unemployment Rate, Youth	Unemployment Rate, Recent Graduates	House Price Growth since 2012	Housing Affordability Ratio	Student Debt per Borrower
Ark.	37.4%	7.6%	8.0%	3.8%	7.9%	2.6	\$24,676
Ill.	53.6	8.7	8.7	5.4	12.0	3.2	30,340
Ind.	42.6	8.0	8.7	5.5	11.7	2.6	25,260
Ky.	38.3	8.2	9.6	4.6	9.8	2.8	25,216
Miss.	44.3	9.2	11.8	5.8	8.6	2.6	25,762
Mo.	43.9	7.2	7.6	3.6	15.3	2.9	26,401
Tenn.	44.4	8.1	9.4	4.0	17.3	3.1	26,793
U.S.	48.8	7.8	8.4	5.2	20.9	3.3	27,342

NOTES: State-level data are reported for entire states; some portions are outside the Eighth District boundaries. The percentage of 25-year-olds living with parents is from the Federal Reserve Bank of New York Consumer Credit Panel/Equifax via Bleemer et al. and is for the years 2012 and 2013. The states’ house price growth is measured using the expanded-data house price index of the Federal Housing Finance Agency. Housing affordability is measured by the median house price divided by median household income from 2009 to 2013 as reported by the Census Bureau; for example, the U.S. value of 3.3 indicates that the median house price of \$177,000 equates to about 3.3 times the median household income of \$53,000. Unemployment rates are averages from 2011 to 2014, calculated using the data from the Current Population Survey. “Youth” is defined as those between 21 and 27. Recent graduates have earned a bachelor’s degree but no higher degree. Student debt per borrower is from Gascon and Noeth (2013) and is measured as average debt per borrower aged 24 to 34 during the first quarter of 2013.

a recession not only suffer in the short-term but will pay a price for about a decade. That's because they start work for lower-paying employers and slowly work their way up toward better-paying jobs.

Combining state-level information on the relevant statistics for labor markets, housing markets and student debt is useful in understanding the differences in co-residence of millennials in District states and the nation. Although the differences may be difficult to decipher on the margins, the ends of the spectrum are clear.

Housing Market


Economist Zachary Bleemer and co-authors found that economic growth may also have constraining effects on millennials' ability to live independently. On the one hand, an improved labor market makes it easier for them to find a job and earn income; on the other hand, stronger economic (and population) growth in some areas limits the supply of housing, pushing up prices. Since 2012, national house prices have increased 21 percent. In many areas, rental price growth has been faster. Because most youth would be first-time homebuyers, they have no housing equity to regain from the rebound in house prices after the housing crash.

In the Eighth District states, home price growth has been slower than the national average, and, generally, housing remains more affordable. Nationally, the median house costs 3.3 times the median household income. In most of the District states, the median house costs less than 3 times the median income. Housing is most affordable in Arkansas, Indiana and Mississippi. The slower growth in prices can be tied to slower population growth in the District states, along with a larger supply of available land for housing.

Student Debt

A 2014 survey of first-time homebuyers found that over half of respondents indicated that student-loan debt was delaying their saving for a down payment on a house.⁴ Consistent with the survey results, Bleemer and his co-authors found that a \$10,000 increase in a student's average debt increases by about 2 percentage points the probability that by the age of 25 he or she will be living with parents or other family members. The data in the table show that the average borrower in the District tends to have slightly lower student-debt levels than the national average; however, student-debt growth in the District has generally been faster than the national average in recent years.⁵

Conclusions

Combining state-level information on the relevant statistics for labor markets, housing markets and student debt is useful in understanding the differences in co-residence of millennials in District states and the nation. Although the differences may be difficult to decipher on the margins, the ends of the spectrum are clear. Arkansas has some of the lowest youth unemployment rates in the District, the slowest house price growth, most affordable housing and the lowest levels of student debt. So, it's not surprising that it has the lowest rate of 25-year-olds living with their parents. On the other hand, Illinois has the highest rate of co-residence, which is consistent with higher unemployment rates, less affordable housing and higher levels of student debt. 

Maria E. Canon is an economist and Charles S. Gascon is a regional economist, both at the Federal Reserve Bank of St. Louis. For more on Canon's work, see <https://research.stlouisfed.org/econ/canon>. For more on Gascon's work, see <https://research.stlouisfed.org/econ/gascon>.

ENDNOTES

- ¹ Millennials are often identified as those born after 1981.
- ² Specifically, the percentage of 25-year-olds who share an address, down to the apartment number, with household members 15 to 45 years older. For more information, see Bleemer et al.
- ³ See Fry.
- ⁴ See National Association of Realtors.
- ⁵ See Gascon and Noeth.

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Growth Is Resilient in the Midst of Uncertainty

By Kevin L. Kliesen

A rise in volatility and economic uncertainty swept through U.S. and global financial markets in late August and early September. Although pinpointing the primary source of this turmoil is difficult, many analysts have pointed to concerns about growth in China after its surprise devaluation of its currency (the yuan), about an overvaluation of stock prices and about the possibility of an interest-rate hike by the Federal Open Market Committee (FOMC) at its September meeting. But in the midst of these developments, the U.S. economy has continued to expand at a moderate pace, job gains have been robust and the unemployment rate has continued to fall.

Second-Quarter Rebound

Growth of the U.S. economy over the first half of the year was stronger than initial estimates suggested. After increasing in the first quarter at a rather tepid 0.6 percent rate, real gross domestic product (GDP) increased at a brisk 3.7 percent annual rate in the second quarter, the Bureau of Economic Analysis (BEA) reported in late August. The second-quarter rebound reflected a healthy acceleration in real consumer outlays, a significant pickup in the pace of capital expenditures by businesses, continued strong growth of real residential fixed investment, and a noticeable upswing in expenditures by state and local governments. The U.S. economy, it seemed, had regained its mojo.

Strains in Global Markets

On Aug. 11, the Bank of China announced a policy change that effectively caused its currency to depreciate by about 3 percent over the following two days. This action took many people by surprise. Then, on Aug. 24, the Shanghai stock market index plunged by more than 9 percent. Many global financial market participants, policymakers and economists began to worry that China was slowing more than most forecasters had suggested. In response, demand-sensitive

The FOMC's September 2015 Economic Projections



NOTE: Projections are the median projections of the FOMC participants. The projections for real GDP growth and inflation are the percentage change from the fourth quarter of the previous year to the fourth quarter of the indicated year. Inflation is measured by the personal consumption expenditures chain-type price index. The projection for the unemployment rate is the average for the fourth quarter of the year indicated. The longer-run projections are the rates of growth, unemployment and inflation to which a policymaker expects the economy to converge over time—maybe in five or six years—in the absence of further shocks and under appropriate monetary policy.

commodity prices—like those for crude oil—fell sharply, adding to the volatility. In the span of five trading days in late August, the Dow Jones industrial average declined by more than 1,800 points, or a little less than 11 percent, and the St. Louis Fed Financial Stress Index rose to its highest point in more than 3½ years.

But in the midst of this turmoil, the regular flow of data indicated that the U.S. economy was likely to continue to advance at a moderate pace in the third quarter—somewhere around 2.5 percent. First, consumer spending, spurred by surging auto sales, was brisk. Second, labor market conditions remained vibrant. Average monthly job gains thus far in 2015 are nearly 200,000; the unemployment rate in September was 5.1 percent, well below the median rate since 1960 of 5.8 percent. Third, housing activity strengthened further in July. Home prices were continuing to increase, and home-builder confidence was at levels last seen in 2005. Finally, because of improving finances, construction spending by state and local governments was on the upswing and hiring by them was advancing at its strongest pace since 2007.

As always, there are crosscurrents in the data that portend emerging risks. Reflecting the sharp appreciation of the dollar since July 2011 and weak growth among key trading partners (Canada, Europe, Asia and South America), exports of U.S. goods tumbled by nearly 9 percent from October 2014 to February 2015. The fall in exports worsened the rapid buildup in business inventories that began over the second half of 2014. In

response, manufacturers slowed the pace of activity to better bring inventories into alignment with sales.

The FOMC Stands Pat

In the midst of these crosscurrents, the FOMC voted Sept. 17 to maintain its 0 to 0.25 percent target range for the federal funds rate. The committee noted that recent developments in global financial markets and the appreciation of the dollar could both slow the pace of U.S. economic activity and put additional downward pressure on consumer prices, which in August 2015 were up only 0.3 percent over the previous 12 months. But much of the recent slowing in headline inflation stems from the more than 50 percent plunge in crude oil prices over the past year—a development that also appeared to reduce long-term inflation expectations. But if, as expected, oil prices stabilize (or even rise modestly), then inflation will begin to rise—perhaps to about 2 percent by about the middle of next year.

As seen in the chart, the FOMC also remains confident that the dip in inflation is temporary—though most participants expect inflation to be less than 2 percent next year. They also expect that the pace of real GDP growth will remain moderate and that the unemployment rate will continue to edge lower in 2016. <http://research.stlouisfed.org/econ/kliesen> for more on Kliesen's work.

Kevin L. Kliesen is an economist at the Federal Reserve Bank of St. Louis. Lowell R. Ricketts, a senior research associate at the Bank, provided research assistance. See <http://research.stlouisfed.org/econ/kliesen> for more on Kliesen's work.

ASK AN ECONOMIST



Limor Golan is an economist at the Federal Reserve Bank of St. Louis, where she has worked since June. Her research focuses on labor economics, applied microeconomics and applied econometrics. Originally from Israel, she enjoys travel, music and movies. For more on her research, see <http://research.stlouisfed.org/econ/golan>.

Golan in Costa Rica.

Q: Is there a gender gap in promotions and pay in the top-executive market?

A: While the facts listed below seem to indicate a gender differential in promotion and wages, they don't tell the whole story.

- Less than 10 percent of executives in large publicly traded firms are women.
- On average, female executives earn less than male executives and hold less-senior positions.

My co-authors, George-Levi Gayle and Robert Miller, and I analyzed a large database of companies and executives, along with the executives' job histories and compensation and their firms' financial performance.¹ We found that, at any given level in their career, women executives are paid slightly more than men who have the same background and demographics and who are running firms of similar sizes. Controlling for these variables, women also have slightly less income uncertainty and are promoted as quickly. In fact, we found that the gender gaps in promotions and pay are primarily because female executives are more likely to leave their roles.

Since the women in executive roles are 50 years old on average, giving birth and caring for children are not plausible reasons for leaving. Other unobserved factors leading these women to quit could include more unpleasantness and indignities, as well as tougher unrewarding assignments, at work. Or it could be that these women find retirement an attractive option.

The reason for the higher attrition rate of females is not clear and deserves further study.

¹ Gayle, George-Levi; Golan, Limor; and Miller, Robert A. "Gender Differences in Executive Compensation and Job Mobility." *Journal of Labor Economics*, Vol. 30, No. 4, October 2012, pp. 829-71.

CHINA AND GREAT RECESSION ARE TOPICS OF NEXT LECTURES

The next two presentations in the St. Louis Fed's lecture series for the public will take place Nov. 2 in St. Louis and Nov. 5 in Memphis, Tenn.

The first lecture will be about the industrial revolution in China. St. Louis Fed economist **Yi Wen** will address:

- How China transformed itself in just 35 years from an impoverished agrarian economy into an industrial powerhouse that produces nearly half of the world's industrial goods.
- Whether other poor nations can emulate China's success.
- What it will take for China to continue its hyper growth and to eventually become a high-income nation.
- What China's development strategy is for the coming decades.
- How the United States can benefit from China's rise.

This presentation will be available for watching over the Internet for those who can't attend in person.

In the second lecture, St. Louis Fed economist **Fernando Martin** will discuss the Great Recession and its aftermath. He will address:

- The key facts that defined this episode.
- Why the recovery has been so slow.
- Whether there were clear winners and losers.
- Whether the recession reinforced pre-existing trends in labor markets.
- The role that fiscal and monetary policies played during the recovery.
- How the Great Recession compares with previous episodes of this sort and with such experiences in other countries.

The lectures are part of a series called Dialogue with the Fed: Beyond Today's Financial Headlines. For details on attending in person or watching selected lectures online, go to www.stlouisfed.org/dialogue-with-the-fed. There, you will also be able to watch and read about the first 17 lectures that have been presented in this series, which was begun in 2011.



ANNUAL PROFESSORS CONFERENCE TO TAKE PLACE IN NOVEMBER

The Federal Reserve Bank of St. Louis' annual conference for college-level economics professors will take place this year Nov. 12 and 13 at the St. Louis Fed. The theme will be "Has the Great Recession Changed Our Understanding and Teaching of Economics?"

Speakers will include St. Louis Fed economists and other data experts, along with academics and others from nearly 20 colleges, universities and other institutions around the country. Keynote speeches will look at the impact of the Great Recession on the understanding of macroeconomics and on household financial stability. Another speech will center on video snippets in the economics classroom. The nine breakout sessions will cover such diverse topics as "Teaching Economics in a Multicultural Classroom: Lessons Learned in the Former Soviet Union" to "The Economics of 'Breaking Bad.'" "

There is no cost to attend the conference, but registration is required. To see the full agenda and to register, go to www.stlouisfed.org/events/2015/11/eeprofessorsconference.

We welcome letters to the editor, as well as questions for "Ask an Economist." You can submit them online at www.stlouisfed.org/re/letter or mail them to Subhayu Bandyopadhyay, editor, *The Regional Economist*, Federal Reserve Bank of St. Louis, P.O. Box 442, St. Louis, MO 63166-0442.



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