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As More States Legalize Marijuana, Economics Comes into Play

KEY TAKEAWAYS

- More states are legalizing marijuana for medical or recreational use, and this movement has created a patchwork of laws and policies on how the drug is treated.
- Among the states that allow the medical use of marijuana, laws can vary greatly in terms of the medical conditions that can be treated by the drug.
- Policymakers face complex decisions on how to regulate marijuana. For example, the goal of maximizing revenue may conflict with the goal of reducing recreational use.

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The topic of marijuana (cannabis) legalization moved into headlines following Colorado's and Washington's decisions to permit recreational use of the drug in 2012. Yet, these changes reflect nearly 50 years of evolution in drug policy.[1]

The relaxation of state laws on the possession and use of marijuana can be traced back to 1973, when Oregon became the first state to decriminalize the possession of modest quantities of marijuana, with a maximum penalty of a $100 fine. Then, in 1996, California approved marijuana usage for medical purposes. As of January 2020, about half of the states and numerous local jurisdictions have decriminalized possession to varying degrees, and 33 states currently have policies that allow patients to use marijuana if they qualify based on their medical diagnosis.[2]

Data for recreational-use states do indicate growth in legal sales and use. For example, in Colorado, monthly recreational sales were between $10 million and $20 million in early 2012; these sales have stabilized to around $90 million per month in 2018, or around $1 billion per year (just under $200 per person per year).[3] Reported marijuana usage by adults in Colorado rose from 10.4% in 2011-12 to 18.1% by 2017-18.[4]

Notable increases in usage after legalization are also evident in Washington and Oregon; in fact, Oregon had the second highest usage rate in the country in 2017-18, with 20% of adults using marijuana at least one time in the past month. In contrast, national usage has been only slowly increasing, up from 7.1% in 2011-12 to 9.8% in 2017-18. Longer-term trends indicate that *daily* marijuana use by all adults has remained relatively stable and at low levels since 2000; some subgroupings put daily rates at below 3%.

A Closer Look at the Eighth District States

Marijuana is treated differently among the seven states that are part of the Eighth Federal Reserve District:[5]

- Three states (Illinois, Missouri and Mississippi) have decriminalized personal possession of marijuana to some degree.
- Three states (Arkansas, Illinois and Missouri) currently have or will have medical marijuana programs in 2020.
- Illinois has allowed sales of marijuana for recreational use.
- Three states (Indiana, Kentucky and Tennessee) continue to criminalize all possession of marijuana.

Adult marijuana use across these seven states is near or below the national average, with 2016-17 estimates ranging from 7.9% in Kentucky to 9.6% in Indiana.

On Jan. 1, 2020, Illinois became the first state in the Eighth District to allow the sale of marijuana for recreational use. January sales reached just under $41 million. Assuming no growth in sales, annually this is $480 million, or about $12 per capita. The Colorado experience suggests sales are likely to exceed this amount, assuming adequate supply.

The year 2020 also marked the addition of Missouri as a state allowing sales of medical marijuana. The table below summarizes key statistics of the medical markets in the three District states that allow these sales; it provides a snapshot of the supply and demand in the market in each respective state. Assuming similar demographics and medical needs in these states, varying state policies explain the different outcomes.

State	First Year of Medical Marijuana	Initial Number of Patients	Current Number of Patients	Number of Licensed Dispensaries in Operation	Average Number of Patients per Dispensary in Operation
Illinois	2015	2,663	76,939	55	1,399
Arkansas	2017	5,459	15,466	6	2,578
Missouri (estimate)	2020	21,000*	[46,319; 128,070**]	192	[241; 667]

* Reported number of preregistered patients

** The lower-bound estimate is based on the average share of population registered as patients (0.8%) across all U.S. states where medical marijuana is legal, and the higher-bound estimate is based on the maximum share in any state, which is Colorado at 2.1%.

NOTES: Arkansas has 32 licensed dispensaries, but only six are operating. The Missouri figure for licensed dispensaries in operation assumes every approved license applicant will operate a dispensary.

SOURCES: Arkansas Department of Health, 2019; Illinois Department of Public Health, 2019; Haslag, Crader and Balossi; and author's calculations.

Initial patient enrollment in Illinois (2,663) and Arkansas (5,459) has steadily increased over time and at similar growth rates. Although Arkansas' population is only a quarter of the population of Illinois, initial enrollment was more than twice as high. In contrast, initial reports for Missouri (with a population around half of Illinois') indicated that over 21,000 patient cards were issued in 2019, well before the program came into effect.[6]

One reason for different enrollment rates is the differences in qualifying medical conditions among these states. For example, post-traumatic stress disorder (PTSD) was the top condition of qualifying patients for medical marijuana in Illinois at over 20% in 2019. In Arkansas, intractable pain, which is not included in the Illinois program, is the top qualifying condition at over 30%, whereas PTSD was reported by only 12% of

qualifying patients. In Missouri, the list of qualifying conditions appears to be broader than for both Illinois and Arkansas by including:

- "a chronic medical condition that is normally treated with prescription medication that could lead to physical or psychological dependence" and
- "in the professional judgment of a physician, any other chronic, debilitating or other medical condition."[7]

State governments are also responsible for determining the supply in the market and approving facilities to grow, produce and dispense marijuana to patients. Missouri has licensed many more dispensaries than both Illinois and Arkansas, meaning Missouri will maintain a system with the fewest patients per dispensary when they start operating this year. Fewer patients per dispensary could result in smaller establishments with lower revenue per store or, if fixed costs are high enough, some licensed dispensaries deciding not to operate. For example, in Arkansas, only six of the 32 licensed dispensaries are in operation because of a range of regulatory and market challenges.

Do Policies Align with Economic Theory?

While public discourse surrounding the legalization of marijuana often revolves around perceptions toward recreational drug use, an economic argument supporting (or opposing) legalization can be made regardless of one's moral standing on use.

The medical use of marijuana raises the question of potential medical benefits and costs. One could view any drug from the same lens by asking, do the potential benefits from appropriate use of the drug outweigh the costs or risk of abuse? What makes the medical marijuana market unique to those of other drugs (e.g., prescription narcotics) is how it is treated by policymakers. For example, states typically do not subject prescription drugs to state sales taxes, while medical marijuana has been subjected to both state sales and excise taxes. Therefore, medical marijuana is taxed more like alcohol or tobacco than a medical drug.

The recreational use of any drug may create social costs, such as long-term health problems, injuries, accidents, unemployment, vagrancy and crime.[8] As a result of these social costs, the free-market price is likely too low and therefore consumption is too high. Policymakers can attempt to solve this problem in two ways: first is criminal enforcement, which increases the cost of supplying drugs, reducing supply in the market and subsequently pushing up prices. Second is taxation on purchases, which reduces the quantity demanded in the market by increasing the price. In theory, both policies could achieve the same outcome of reducing drug use to a socially optimal level.

Policymakers face the difficult task of taking this theory to practice. Enforcement requires determining the most efficient techniques and the severity of penalization. Policymakers must also account for the adverse consequences of incarceration. On the other hand, taxation requires determining the optimal tax rate, which may vary for different types of consumers. Again, there may be a cost of enforcing this tax on those who seek to avoid payment.[9] For both policies, the main challenge is determining the social cost of drug use, which ultimately determines the degree of necessary enforcement or taxation.

Conclusions

Research is still needed to understand the economic impact of recent state policy changes, and differences across states provide researchers with many real-world "experiments" to study. However, with marijuana remaining illegal at the federal level, these firms face additional challenges in operating their businesses, such as lack of access to banking networks or developing interstate supply chains.

While legal marijuana has been touted as a means for improving the fiscal position of states through lowering enforcement expenditures and generating additional tax revenue, the reality is much more complex. First,

taxation on medical marijuana use is inconsistent with tax policies on other drugs used in medical treatment. Over time one would expect these policies to converge if a consensus emerges on acceptable medical use. Second, increases in tax revenue from recreational sales likely overstate the fiscal impact or could be short-lived. Consumers are likely to spend a greater share of their income on marijuana and less on other taxable goods, such as alcohol.[10] Furthermore, states may use the new tax revenue source as a replacement for existing revenue sources (or future revenue increases).[11] Third, as is the case with many types of "sin taxes"—taxes on products such as alcohol, tobacco and the lottery—individuals in lower income brackets are generally more likely to consume these products, thereby producing a regressive tax policy. Fourth, the reliance on sin taxes for revenue creates an incentive for policymakers to set a tax rate that maximizes revenue as opposed to a higher tax rate that would reduce consumption.[12]

Olivia Wilkinson, a research associate at the Federal Reserve Bank of St. Louis, provided research assistance.

Endnotes

1. As of January 2020, eleven states and Washington, D.C., permit the sale of marijuana for adult recreational use. Marijuana sale and use remain illegal under federal law.
2. See NORML webpage for a current list.
3. See Felix and Chapman for an analysis on Colorado. It is important to note that a portion of these sales could be to nonresidents.
4. This is defined as use over the past month. See National Survey on Drug Use and Health, State Estimates.
5. Headquartered in St. Louis, the Eighth Federal Reserve District includes all of Arkansas and parts of Illinois, Indiana, Kentucky, Mississippi, Missouri and Tennessee.
6. See Edwards.
7. See Missouri's "Frequently Asked Questions for Physicians."
8. See Becker, Murphy and Grossman. The model is designed to apply to any illegal drug, so this assumption means there is no socially beneficial (i.e., medical) case for use. Even with this assumption, the authors find taxation is the preferred policy of enforcement.
9. When determining which market outcome is the most efficient, an important consideration is the elasticity of supply and demand for drugs. If demand is inelastic (i.e., because the drug is highly addictive), enforcement may be optimal because consumers will still purchase close to the same amount even with higher taxes. See Becker, Murphy and Grossman for a complete discussion.
10. See Anderson.
11. See Dadayan for a historical perspective and review of tax policies.
12. For example, in the extreme case in which optimal consumption is zero, the optimal tax rate would be excessively high, and consumption (and tax revenue) would be near zero.

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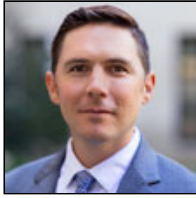
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How Cyber Deposits Affect Perceived Competition in Banking Markets

KEY TAKEAWAYS

- Banks are increasingly gathering deposits using online-only "cyber" branches.
- These cyber deposits can have a nontrivial effect on the measured level of concentration in banking markets nationwide.
- Depending on the nature of the market, adjusting for these cyber deposits could make the measured levels of concentration increase or decrease.

Andrew P. Meyer

With the proliferation of high-speed internet connections, online banking is becoming more common. In a recent survey, the Conference of State Bank Supervisors (CSBS) found that 91.5% of community banks offered mobile banking.[1] In the same survey, 82.6% of community banks offered electronic bill payment, and 78.9% offered remote deposit capture.

A less common technological development is the use of online-only branches for gathering deposits nationwide. A big advantage of online-only branches is their lower overhead compared with that of a traditional brick-and-mortar branch, which can flow to the bank's customers, employees and owners.

An important distinction between a "cyber" branch and a traditional branch is the area of service. If a bank sets up a traditional branch in a given market—such as a metropolitan area or a county—it typically serves customers only in that market. A cyber branch, in contrast, can draw depositors and other customers from the entire nation. When the bank reports those deposits at a branch level, the market with a cyber branch gets credit for deposits that clearly come from outside of the market.

Existing Cyber Branches

All Federal Deposit Insurance Corp. (FDIC)-insured institutions report their branch-level deposits as of June 30 each year, and the FDIC publishes the raw data in its annual Summary of Deposits (SOD).[2] The SOD designates any full-service cyber branch with a special code (that is, with a branch service type equal to 13). The physical address for a cyber branch is usually the same as for the head office, but the bank can choose to attribute the cyber deposits somewhere else as well.

As shown in Table 1, there were 86,374 bank branches nationwide in 2019. At that time, 191 (0.22%) of all branches were designated as cyber branches, with a service type code of 13.[3] These branches were spread

across 114 markets. Although small in number, these branches were larger than average, accounting for $407 billion (3.18%) of total deposits.

Table 1

2019 Branch-Level Deposits by Branch Service Type

Service Type	Service Type	# of Branches	% of Branches	Total Deposits (in Millions)	% of Deposits
11	Full Service, Brick-and-Mortar Office	79,053	91.52	$12,199,084	95.21
12	Full Service, Retail Office	4,255	4.93	$109,463	0.85
13	Full Service, Cyber Office	191	0.22	$407,027	3.18
21	Limited Service, Administrative Office	260	0.30	$3,740	0.03
22	Limited Service, Military Facility	9	0.01	$529	0.00
23	Limited Service, Drive-Through Facility	1,932	2.24	$92,303	0.72
29	Limited Service, Mobile/Seasonal Office	466	0.54	$950	0.01
30	Limited Service, Trust Office	208	0.24	$28	0.00
	All Branches	*86,374*		*$12,813,124*	

SOURCES: 2019 FDIC Summary of Deposits and author's calculations.
NOTE: Retail offices include branches in grocery stores and other retail outlets.

A total of 141 U.S. banks had one or more cyber branches, and nine of those banks had only cyber deposits. Of the 141 banks, 109 were considered community banks (with total assets less than $10 billion), constituting 2.1% of all community banks. In the CSBS survey, 2.2% of community banks claimed an online-only division; however, an additional 2.2% were actively planning to start one, and another 15.2% had discussed creating one. Thus, we can expect the amount of cyber deposits to rise in future years, given the continuing increase in use of technology in banking.

Effect of Cyber Branches on Market Concentration

The branch-level data in the SOD can be used to determine the level of concentration in any given market.[4] To determine market concentration and identify mergers as potentially anti-competitive, the Department of Justice (DOJ) uses a common measure of market concentration: the Herfindahl-Hirschman Index (HHI).

For banking markets, the HHI is calculated by summing the squares of banks' shares of deposits in a given market. For example, if there are five banks in a market, and each bank has 20% market share, the resulting HHI would be 2,000 ($20^2 + 20^2 + 20^2 + 20^2 + 20^2$). The DOJ then uses the measure to categorize the market:

- A market with an HHI of 1,000 or less is considered unconcentrated (competitive).

- A market with an HHI between 1,000 and 1,800 is moderately concentrated (moderately competitive).
- A market with an HHI above 1,800 is highly concentrated (uncompetitive to highly uncompetitive).[5]

This also means that a perfectly competitive market would have an HHI of zero, while a pure monopoly would have an HHI of 10,000 (100^2).

A merger that would increase a market's HHI by 200 points or more and result in the market HHI exceeding 1,800 would generally require that regulators conduct an additional, customized analysis to identify potential mitigants before allowing the merger. A merger that would result in a bank having a share of deposits of 35% or more in a given market triggers a similar analysis.

Not surprisingly, rural markets tend to be much more concentrated than urban markets. The percentage of rural markets considered highly concentrated (an HHI above 1,800) has hovered in the high 80s over the last 15 years, while the analogous percentage of urban banks has hovered in the high 20s.[6]

It is easy to see why the presence of cyber branches in a market can complicate such a measure of market concentration. Regardless of the size of the bank receiving cyber deposits, they clearly distort the measured level of concentration.

We can see from Table 1 that cyber branches do not represent a large proportion of deposits nationwide, either as a percentage of branches or of total deposits. However, the proportion can be quite large in particular markets, as shown in Table 2. For example, 60% of the deposits credited to the Hardy County, W.Va., market come from two cyber branches. In a market like this one, analysts should investigate how many of those deposits are actually local before computing any market concentration ratios. Unfortunately, the data needed to conduct such an analysis are not currently available in an easily accessible form, so regulators may need to make some assumptions.

Table 2

Cyber Deposits in Selected Markets

Market	# of Cyber Branches	Total Deposits (in Millions)	Cyber Deposits (in Millions)	% of Cyber Deposits
Hardy County, W.Va.	2	$713	$427	60
Philadelphia	7	$459,910	$147,369	32
Jacksonville, Fla.	1	$65,384	$20,570	31
Salt Lake City	3	$551,719	$120,077	22
Washington, D.C.	3	$261,514	$40,989	16

SOURCES: 2019 FDIC Summary of Deposits and author's calculations.

In the absence of more granular data, one potential assumption is that none of the deposits of a cyber branch were actually gathered from depositors in that market. This assumption would be valid if the vast majority of

the deposits credited to a cyber branch were gathered from depositors across the nation. Setting cyber deposits from some positive number to zero in a given market could have one of two effects on the calculated HHI:

- If the cyber deposits belong to one or more of the less dominant banks in the market (with a relatively low market share), then the change would make the market appear more concentrated. That is, the artificial inflation of the deposits of the smaller market-share banks no longer masks the relative dominance of the larger market-share banks.
- Conversely, if the cyber deposits belong to one or more banks with a relatively large market share, the removal of those deposits would reduce the perceived dominance of the higher-share banks and, thus, reduce the measured HHI.

In reality, the former situation is more common than the latter one. That is, banks with cyber branches in a market tend to have a relatively small role in that market (at least on paper). To illustrate this point, setting cyber deposits to zero (i.e., making the assumption that none of the deposits come from consumers or businesses residing within the market) increases the measured HHI in 60 markets and decreases the measured HHI in only 33 markets. The largest measured increase in the HHI is 524, and the largest decrease is 2,602. One must try to understand the specific circumstances of each market before applying a one-size-fits-all methodology.

Conclusion

The upshot of this analysis is that we need more granular data to fully answer the deposit concentration question. Using either extreme of 0% or 100% can distort the picture of competitiveness in individual markets.

In addition, as the cost of technology decreases, the measurement problems associated with cyber deposits are likely to get worse, not better. Even though bankers know the addresses of their cyber depositors, the systematic reporting of such data may impose nontrivial regulatory burdens on the banking system (and especially on smaller community banks), and this article does not necessarily call for such a change. Rather, it serves as a warning about a potential measurement problem that could mislead analysts in both directions.

Endnotes

1. See Conference of State Bank Supervisors. "CSBS 2019 National Survey of Community Banks," in *Community Banking in the 21st Century*, 2019.
2. See FDIC Summary of Deposits.
3. Twenty-one of these branches were designated as cyber branches but did not yet have any deposits attributed to them.
4. For a background on the relevant laws and regulations, see Meyer.
5. See U.S. Department of Justice and the Federal Trade Commission, Horizontal Merger Guidelines, Aug. 19, 2010.
6. See Meyer.

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The Changing Relationship between Trade and America's Gold Reserves

KEY TAKEAWAYS

- During the era of the classical gold standard, changes in a nation's gold reserves were closely linked to changes in its trade balance.
- This relationship broke down as the gold standard struggled during times of crisis.
- After World War II, Bretton Woods tied the dollar to gold. But fear that the U.S. couldn't meet its gold-dollar exchange rate ended this system in the 1970s.

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Yi Wen , Brian Reinbold

Throughout most of U.S. history, American currency was tied to the value of gold, requiring the country to maintain large gold reserves to be able to support a gold standard. The figure below estimates total U.S. official gold reserves from 1878 to 2018. We immediately see that there have been some significant changes to U.S. gold holdings over time. U.S. gold reserves doubled from 1900 to 1913, nearly doubled again from 1913 to 1933, quadrupled from 1933 to 1941, and then halved by 1970.

We also plot the U.S. goods trade balance as a percentage of gross domestic product (GDP) because, under a gold standard, we would expect the U.S. to accumulate gold when it runs trade surpluses and gold to flow out when the U.S. runs trade deficits. In general, we see the U.S. accumulating gold as it ran trade surpluses from 1878 until the early 1920s, but afterward this relationship was tenuous at best as the international payments system experienced heightened uncertainty and significant change.

U.S. Gold Reserves and U.S. Goods Trade Balance: 1878-2018
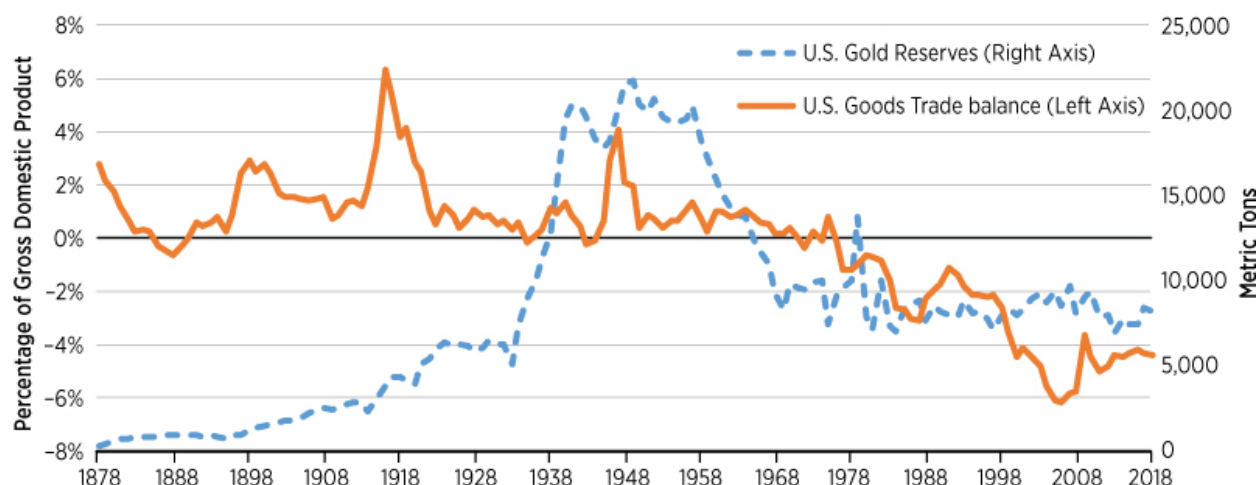
Countries suspended gold convertibility during World War I, and the gold standard was in a state of flux after the Great War. Then the outbreak of the Great Depression would lead to the complete abandonment of the gold standard. At the end of World War II, the Bretton Woods system was formed in which only the U.S. dollar was directly linked to gold. Finally in the early 1970s, Bretton Woods ended, giving rise to the international system we have today—a system of fiat currencies and floating exchange rates. In this article, we explore this evolution of the international monetary system in more detail, as well as how it ties to U.S. gold holdings.

Pre-World War I: The Classical Gold Standard

The value of gold formed the basis of the international monetary system from around 1870 to the outbreak of World War I, and this period is referred to as the classical gold standard. In the classical gold standard, a nation's currency can be exchanged at any time for a fixed quantity of gold. For example, one troy ounce of gold was officially worth $20.67 through much of the 19th and early 20th century. Maintaining parity between the currency and the value of gold required a nation to hold large quantities of gold reserves, and monetary policy would then focus on maintaining a ratio of gold reserves to currency notes. For example, if the nation's gold holdings declined, then that country's monetary authority could raise short-term interest rates to attract gold because people would be more willing to exchange their gold for currency to lock in a higher nominal return.

Since currencies are tied to gold, this also leads to a system of fixed exchange rates. Furthermore, balance of payments between nations are adjusted by gold flows to maintain these fixed exchange rates. For example, if a nation runs a trade surplus, that nation will then have a net inflow of gold; conversely, a trade deficit leads to a net outflow of gold.

So it generally becomes difficult for a nation to sustain persistent trade deficits, as this leads to persistent net outflows of gold, which would then make it difficult to defend the gold parity. Ultimately, adhering to the gold standard prevents large gyrations in a nation's balance of payments. In addition, fixed exchange rates make the cost of foreign goods more predictable, which can facilitate international trade.

During this time, the industrialized world experienced unprecedented peace, economic growth and stability, and trade openness, and the gold standard functioned well. However, the subsequent years would test the gold standard's ability to endure economic crises.

Wartime Disruption

Although functioning well in the previous decades, the gold standard would struggle to last the calamity into which World War I threw the international payments system.[1] When the war started, European countries quickly suspended convertibility to gold so that they could more easily finance the war effort. The war was very costly, and tax revenue could not sufficiently fund the war effort, so nations resorted to inflationary financing of their debt, which could not easily be done when constrained by gold.

After the end of the war, the international payments system was also left in ruins. Especially for Europe, returning to the gold standard presented a formidable task after four years of inflation, price controls and exchange controls. It would require deflation to return to the prewar price level under the old parity.

Also, the exorbitant costs of the war led to huge trade imbalances that then led to large fluctuations in countries' gold reserves: During World War I, the U.S. ran large trade surpluses and thus accumulated gold reserves, while many European countries ran trade deficits and saw their gold reserves decline. Therefore, a return to the gold standard under the old parity would have also required international adjustments in nations' gold reserves.

The Roaring '20s

After the war, Great Britain was determined to return to the gold standard. But the country had to wait before it allowed the British pound to be freely exchanged for gold because the imbalances could have led to a run on the U.K.'s gold reserves. Since the prewar pound sterling was considered a world reserve currency and essentially as good as gold, many nations waited for the U.K. to return to the gold standard before they followed suit. However, it would not be easy for Great Britain to reestablish the gold standard because it needed to lower the price level, wait for sterling appreciation and attract gold reserves to return to the old parity.

So Great Britain began to raise its Bank rate to as high as 7% by 1920 at the expense of the domestic economy, leading to an economic depression due to shrinking credit. Likewise, the U.S. was in a similar position as Great Britain: The Federal Reserve Banks raised the discount rate to as high as 7% by 1920 to fight mounting inflationary pressures and to defend the gold standard, which also led to an economic depression.

However, the competition between the U.K. and the U.S. to attract gold by raising rates actually made it more difficult to realign world gold reserves and exchange rates. The U.S. was more successful attracting gold reserves in the early 1920s, and this delayed the U.K.'s return to the gold standard until 1925, after the Fed lowered its discount rate and sold the British $200 million worth of gold.[2]

This episode of the U.K. and the U.S. competing to attract gold reserves also highlights a trade-off that monetary policy must make under a gold standard: Monetary policy can focus on its international responsibilities (i.e., maintaining fixed exchange rates and parity of notes with the value of gold) or focus on the domestic economy—but not both. At that time, both central banks focused on their international responsibilities in hopes of maintaining the gold standard, which was detrimental to their domestic economies.

Raising short-term interest rates shrank credit and resulted in high unemployment at a time when both economies could have greatly benefited from monetary stimulus. But a gold standard shackled policymakers, leading to counterproductive monetary policy.

In addition, the period's international competition, instead of cooperation, exacerbated matters. Although most of the developed world had returned to the gold standard by the mid-1920s, systemic imbalances still existed; combined with Europe's need to finance large debt burdens accumulated from the war, the imbalances left the international payments system fragile.

The Great Depression and World War II

The Great Depression[3] saw unprecedented international deflation that would finally destroy any remnants of the classical gold standard. In the U.S., wholesale prices fell 37%, and farm prices dropped 65% from October 1929 to March 1933.[4] Furthermore, deflation raised the real value of debt, making it nearly impossible for European countries to service their large debt loads resulting from the Great War. This spelled doom for the gold standard, and Great Britain abandoned the system in 1931.

This left the U.S. in a predicament similar to what it faced at the end of World War I: Focus on its international standards by tightening credit to demonstrate its commitment to the gold standard, or focus on the domestic economy by expanding credit to combat persistent deflation and high unemployment. Under President Franklin Roosevelt, however, the U.S. prioritized domestic objectives.

In 1933, the U.S. suspended gold convertibility and gold exports. In the following year, the U.S. dollar was devalued when the gold price was fixed at $35 per troy ounce. After the U.S. dollar devaluation, so much gold began to flow into the United States that the country's gold reserves quadrupled within eight years. Notice that this is several years before the outbreak of World War II and predates a large trade surplus in the late 1940s. (See figure above.) Furthermore, the average U.S. trade surplus was only 0.6% of GDP during this period, highlighting the complete breakdown of fundamentals of the classical gold standard.

In 1930, the U.S. controlled about 40% of the world's gold reserves, but by 1950, the U.S. controlled nearly two-thirds of the world's gold reserves.[5] The large U.S. gold stockpile would prevent any concern over the country's ability to meet its commitment to the gold-dollar exchange rate, but this large world imbalance would completely prevent other nations from returning to the gold standard under the old parities.

Conclusion

After World War II,[6] it became obvious that the world needed a new international payments system that incorporated the lessons learned from the previous three decades, and thus the Bretton Woods system was born. The hope was to still have a system with the discipline of gold built in but not too constraining to induce unnecessary economic hardship that nations experienced trying to salvage the gold standard after World War I. Under Bretton Woods, only the U.S. dollar was tied to gold, while other currencies were tied to the value of the U.S. dollar, thereby creating a system of fixed exchange rates. This gold exchange standard indirectly linked other currencies' value to gold.

However, eventually fear mounted that the U.S. would not be able to meet its commitment to the gold-dollar exchange rate after persistent balance-of-payments deficits led to too many dollars in circulation, so there was a run on U.S. gold reserves in which they were halved by 1970. From 1957 to 1970, the U.S. actually ran slight trade surpluses (about 0.7% of GDP), yet gold flowed out of the U.S. in droves. Although gold indirectly backed the international payments system during Bretton Woods, the mechanism to balance trade flows through the exchange of gold did not function as we saw under the classical gold standard.

President Richard Nixon ultimately ended gold-dollar convertibility in 1971,[7] effectively ending the Bretton Woods system; the result was a new system of fiat currency and floating exchange rates. Despite increasing U.S. trade deficits since the end of Bretton Woods, the country's gold reserves have remained relatively stable

(as seen in the figure above), underscoring the present weak (and possibly nonexistent) link between gold and trade flows.

Endnotes

1. World War I was from July 28, 1914, to Nov. 11, 1918.
2. See Crabbe.
3. The Great Depression was from August 1929 to March 1933.
4. See Crabbe.
5. See Green.
6. World War II was from Sept. 1, 1939, to Sept. 2, 1945.
7. See Ghizoni.

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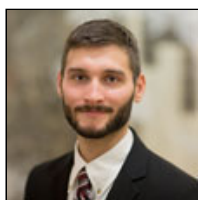
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Expected U.S. Macroeconomic Performance during the Pandemic Adjustment Period

James Bullard

The text below first appeared on the St. Louis Fed On the Economy Blog *on March 23, 2020.*

Introduction[1]

The coronavirus has the potential to create catastrophic health outcomes in the U.S.[2] In order to mitigate this, public health officials have recommended a variety of social-distancing policies to slow the spread of the virus. In addition, social interaction has declined dramatically due to voluntary withdrawal by individuals, corporate work-from-home policies and government restrictions.

These actions and policies have had the effect of engineering a *controlled, partial and temporary shutdown* of certain sectors of the U.S. economy. The productive capacity of the U.S. economy is fundamentally strong and resilient—nevertheless, this organized "throttling down" radically changes the way we need to think about and gauge the health of the U.S. economy in the near term.[3] The U.S. economy will, by design, behave very differently than what is conventionally assumed in ordinary times—so differently, in fact, that ordinary business cycle analysis will be ineffective and cease to make sense. The goals of macroeconomic policy will need to be very different, in some ways the opposite of what we would normally try to accomplish.

A National Pandemic Adjustment Period

I begin by recommending that the President and Congress declare a "National Pandemic Adjustment Period" (NPAP), providing a natural focal point for the expectations of policymakers and Americans at large concerning what is happening. The NPAP would initially extend from now until the end of the second quarter of 2020, and would be flexible enough to be shortened or extended as necessary depending on how the virus progresses. Special policies would be in effect for the duration of the NPAP, and the dates that these special policies would expire could be tied to the end date of the NPAP.

There are three broad goals to be accomplished during the NPAP.

1. Greatly Reducing Economic Activity

The first goal during the NPAP is to intentionally reduce (reduce!) economic activity in order to meet public health objectives. Production is to be carried out only if (1) the good or service is deemed "essential," or (2) the good or service can be produced in a way that does not risk transmission of the virus. If production is reduced in this way, this will be considered *success* during the NPAP.

My rough initial estimate of the level of U.S. real GDP (and hence national income) that meets this public health objective is up to 50% of normal production. In other words, we need to throttle back the U.S. economy to produce at only half its normal pace.[4]

It would be inappropriate to characterize that outcome as a recession because it is undertaken intentionally to meet public health objectives. In particular, it is inappropriate to argue for "economic stimulus" intending to ramp up production or create new demand in this situation, as that would work at cross-purposes with the goal of reducing the level of economic activity in order to meet public health objectives. A better concept is that we should strive to "keep everybody whole" during the NPAP, as described in more detail below.[5]

A normal quarter of production of goods and services in the U.S. recently, in very round numbers, is about $5 trillion. Producing only half would mean that national income is cut to about $2.5 trillion during the second quarter of 2020 when the NPAP is in effect. This is a *quarter-over-quarter* drop of 50%, well outside historical experience in the U.S.

This outcome is expected and temporary and simply reflects the large investment in public health that will be made in the U.S. This change in magnitude is something to be expected and to prepare for, reinforcing the point that standard business cycle tracking serves little useful purpose in the near term.[6] Data during the NPAP will be coming from a special situation.

2. Keeping Households and Firms Whole

The second goal of policymakers is to prevent destruction of livelihoods and firms during the NPAP. This planned, organized partial shutdown will clearly have very uneven effects across households and firms during the NPAP. Some types of businesses are closed down completely, while other types continue to operate.

On the household income side, the goal is to keep households whole. We already have government income maintenance programs, popularly known as unemployment insurance (UI). I recommend using these programs extensively and changing the label on these programs to "pandemic insurance" (PI) during the NPAP to more appropriately reflect what is happening. Heavy use of this facility by individuals—to the extent that it helps to maintain laid-off workers' income—should be used as a metric of policy *success* during the second quarter. Heavy use would mean that the government is making the proper transfers to those who have been disrupted by the health objectives of the country. To help accomplish this, benefit replacement rates could be increased substantially from the current average rate in the U.S. of about 45% to a value close to or equal to 100%.

Moreover, every state has a well-established UI system with rules already in place. Stress will be placed on these systems as the number of claims made in the upcoming weeks may be unprecedented; nonetheless, this facility is much better than the alternative of trying to set up a new system on the fly.

My initial estimate of the level of pandemic insurance that may be appropriate during the NPAP period is 30%.[7] That is, up to 30% of the workforce could be using this program as part of an optimal policy response to the pandemic.

The intentional, partial reduction in production means capital will also be unemployed during the NPAP. Conceptually, factories will shut down for a period of time and then reopen once the pandemic has passed with the capital intact. National policy, therefore, needs to make the owners of capital whole during this period. Most proposals in this area under consideration in Congress provide loans to businesses, large and small, to tide businesses over until they can start up again after the NPAP.

3. Paying for the Pandemic Response

The third goal is to pay for the pandemic response. If national income falls by 50% during the NPAP, households will not be able to maintain their normal lifestyles. In other words, consumption is likely to be much

lower than normal for most households during the NPAP. Most of this reduction will come as a result of the health objectives themselves—many avenues for ordinary consumption will simply be closed, and in addition people are being asked to remain in their homes. To a large extent, national income will be down, but national consumption will be down in tandem with national income. This is the nature of "hunkering down."[8] The federal government is certainly borrowing, but most of this is oriented toward maintaining market functioning and extending loans to businesses to tide them over until full-speed production can once again resume.

Summary

Just as incoming macroeconomic data should be interpreted in light of the unprecedented nature of the public health policy response to COVID-19, so too should the macroeconomic policies be understood and conducted. For example, the phrase "stimulus" may not be entirely appropriate now: Many people may not want to fly out of caution or be able to dine out because of legal decree. The goal of macroeconomic policy, at this stage, is not to "stimulate" them to do these things. Rather, at this stage, macroeconomic policy could be better described as maintenance and support, more a matter of insurance than stimulus. For example, enhanced unemployment benefits help maintain the income of workers temporarily laid off because of a change in demand in the sector where they had been employed.

Looking ahead, July 1 may provide an important checkpoint. At that point, there is a reasonable chance that public health needs will be reduced, allowing health authorities to ease the throttling down of U.S. economic activity. As of today, the situation remains fluid, and the views expressed here could easily change with events in the days and weeks ahead.

Endnotes

1. Any views expressed are my own and do not necessarily reflect the views of the Federal Open Market Committee.
2. I take as a baseline for my analysis Ferguson et al. "Impact of Non-Pharmaceutical Interventions (NPIs) to Reduce COVID-19 Mortality and Healthcare Demand." Imperial College, COVID-19 Report 9, March 16, 2020.
3. I recommend the following analogy: Suppose you are driving your car down the freeway at 70 mph, but then you encounter a construction zone. You have to slow down in the construction zone, perhaps quite significantly, work your way through the construction zone, and then resume your previous speed. There is nothing wrong with your car, but you nevertheless have to slow down.
4. I intend to update this value going forward as it becomes clearer which parts of the economy actually shut down and which parts do not.
5. Macroeconomic policy should seek to align household and business incentives with national health goals, not to work against those goals.
6. For example, economists often translate quarter-on-quarter growth rates in variables, such as GDP or consumption, into annual rates by (roughly) multiplying by four. In the current environment, one could see a quarter-on-quarter change in a variable of 50%. Annualized, this would be called a "200% decline." Annualizing serves little use in the current environment.
7. I intend to refine this estimate going forward based on pandemic developments.
8. This may also be viewed as what macroeconomists call "home production," that is, the movement of production from the market sector, where it is counted in GDP, to the home sector, where it is not counted in GDP. Famous and familiar examples of services that move back and forth between sectors are meals, which are sometimes eaten outside the home and sometimes produced in the home, as well as child care, which is sometimes provided at home and sometimes provided in a market setting.

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James Bullard is president and CEO of the Federal Reserve Bank of St. Louis. In this capacity, he oversees the activities of the Eighth Federal Reserve District and is a participant on the Federal Reserve's Federal Open Market Committee, or FOMC, which sets the direction of U.S. monetary policy. See more from President Bullard.

The Efficacy of Enhanced Unemployment Benefits during a Pandemic

KEY TAKEAWAYS

- Social-distancing policies to slow the transmission of coronavirus have disrupted economic activity, shuttering firms and throwing many Americans out of work.
- Providing more generous unemployment insurance benefits to laid-off and furloughed workers can be an efficient, targeted means to help offset their loss of income.
- Small business loans aimed at keeping workers on payrolls could also be useful. But such loans may be slow and operationally challenging to implement.

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Bill Dupor

The economic impact of efforts to slow the transmission of the coronavirus is now beginning to emerge.[1] On March 19, weekly new unemployment insurance (UI) claims spiked by 70,000. Investment bank Goldman Sachs predicts that on March 26, new claims will come in at 2.25 million people. A natural question is: How much income support will the federal and state governments provide to those who are eligible for unemployment benefits?

In this article, I discuss the UI system, the current UI benefit schedules of states that are part of the Eighth Federal Reserve District,[2] and ways one might adjust the current system in response to the economic effects of the COVID-19 virus and of the public health response to the virus.[3]

The Current UI System

UI benefits are often framed as "replacement rates," i.e., the weekly benefit amount divided by the weekly (pre-unemployment) take-home pay. These rates vary across individuals and U.S. states as well as over time.[4] The average replacement rate in the U.S. is about 45%.[5]

Generally speaking, weekly benefits are calculated using an individual's recent earnings history (from payroll records over the preceding year). Weekly benefits increase as an individual's past earnings increase, but they are also capped at some level, which varies by state. For example, Indiana pays a weekly benefit equal to 47% of past earnings, up to a limit of $390 per week. In some states, a claimant's marital status and number of dependents can influence benefit amounts.

By examining the specific dollar amounts, we can gauge the generosity of UI in several states under the current system. This could give policymakers a sense of whether UI generosity should be adjusted to reflect current economic conditions and, if so, how much to adjust it.

I used information from several state governments' websites to compute benefits in two scenarios.[6] First, I considered a low-income case, someone who had been earning $600 per week before taxes,[7] and a medium-income case, someone earning $1,000 per week.[8] In each case, I assume the person entering unemployment had been working continually over the preceding 12 months.

Table 1 reports the weekly UI benefits that would be received by a recently unemployed person as well as the lost income for a 12-week unemployment spell in each case.[9]

Table 1

Unemployment Insurance Benefits under Current System

State	Pretax Weekly Income before Layoff		Weekly UI Benefits following Layoff		Lost Income during 12 Weeks of Unemployment	
	Low-Income Worker	Medium-Income Worker	Low-Income Worker	Medium-Income Worker	Low-Income Worker	Medium-Income Worker
Arkansas[†]	$600	$1,000	$300	$451	$3,600	$6,588
Illinois	$600	$1,000	$282	$470	$3,816	$6,360
Indiana[†]	$600	$1,000	$282	$390	$3,816	$7,320
Kentucky[†]	$600	$1,000	$372	$552	$2,736	$5,376
Mississippi[*†]	$600	$1,000	$235	$235	$4,380	$9,180
Missouri[†]	$600	$1,000	$312	$320	$3,456	$8,160
Tennessee[†]	$600	$1,000	$275	$275	$3,900	$8,700

* The current weekly UI benefit is at this state's maximum amount in the low- and medium-income scenarios.
[†] The current weekly UI benefit is at this state's maximum amount in the medium-income scenario.

SOURCES: State government websites and author's calculations.

NOTES: All units in pretax dollars. Each state's website includes a disclaimer that the estimate is not guaranteed but is, using varying language across states, a reference for determining approximate potential benefit amounts.

For example, the low-income worker in Arkansas would receive $300 per week in UI benefits under the current system. Thus, a 12-week period of unemployment would result in $3,600 in lost income for that person. Meanwhile, the medium-income Arkansan would receive $451 per week, implying lost income of $6,588 for the same period. Moreover, this individual's higher pre-unemployment income limits the benefit to the maximum weekly amount set by the state.

In fact, in every state except Illinois, the medium-income person would receive the maximum benefit set by that state. In Mississippi, both low- and medium-income people would receive that state's maximum UI benefit upon becoming unemployed.

Policymakers may view this level of income replacement as too low in the current economic environment. This is not unreasonable given that policymakers enhanced benefits during the last recession (2007-2009). As background, I next describe how UI was enhanced during that recession.

Enhancements to UI during the Last Recession

During the previous recession, the national unemployment rate and the total UI benefits paid peaked during the fourth quarter of 2009 and the first quarter of 2010, respectively. The unemployment rate reached 10% in October 2009. During the first quarter of 2010, $18.6 billion was paid in UI benefits, with an average weekly payment of $306. In contrast, during the last quarter of 2019, the corresponding values were $6.4 billion and $378 per week, respectively.

A number of changes were temporarily made to UI at the time. Through several federal actions spread out over months, the duration on UI benefits was extended from about 26 weeks to up to 99 weeks. The most significant UI actions during the episode were provisions in the American Recovery and Reinvestment Act of 2009 (i.e., the 2009 Recovery Act).

From the standpoint of recipients, there were three main changes.[10] The first was one of the extensions described above. Second, benefits were increased by $25 per week. Third, a UI claimant was provided access to a 65% subsidy for COBRA health insurance benefits. (Claimants paid the remaining share of the costs.)

COBRA is a federal health insurance law that was in force in the U.S. before the recession; the law allows for the continuation of employer-provided health insurance coverage for workers losing their jobs. Before the 2009 Recovery Act subsidy provision, claimants paid the entire cost of COBRA; this provision expired a few years later.

COBRA is not and, in 2009, was not inexpensive. Labor economist Wayne Vroman wrote, "Its average annual cost during 2008 [i.e., without the subsidy] was $4,704 for a single person and $12,680 for families."

Combining the cost of UI changes and COBRA subsidies, the total unemployment-related spending from the Recovery Act was $65.1 billion.

Federal UI Changes in Response to the Pandemic

Thus far, changes to the UI system have largely been administrative. The Families First Coronavirus Response Act, signed into law March 18, introduced temporary changes to requirements on states in relation to unemployment compensation. These measures include waiving work search requirements and the one-week waiting period.[11] Some states had already unilaterally taken actions to ease UI benefit access.

The Potential Effect of New Federal Proposals

The Coronavirus Aid, Relief and Economic Security (CARES) Act, Senate Bill 3548,[12] was introduced to the Senate on March 19. Initial estimates put the cost of the proposal at $1 trillion, but current negotiations in Congress have pushed that figure to $1.8 trillion, according to media reports Tuesday.

Many aspects of the CARES Act were outlined in a two-page plan by the Treasury Department, according to a document obtained by CNN on March 18. Analyses of the legislation and a reading of the Treasury plan both do not indicate major changes to the UI system. Nonetheless, the CARES Act could impact many workers at small firms experiencing interruptions due to the virus. The Treasury plan states that the proposed legislation would:

> "[P]rovide continuity of employment through business interruptions … [and] authorize the creation of a small business interruption loan program and appropriate $300 billion for that program."

According to the Treasury Department, employers with 500 employees or less would receive loans equal to "100 percent of 6 weeks of payroll, capped at $1540 per week per employee." Borrowers would be required to maintain employment for all employees for eight weeks from the date the loan is issued.

It is noteworthy that much of the effects of this proposal could be accomplished through the payment of UI benefits directly to employees, combined with increased UI generosity with respect to both the replacement rates and caps. This could, in a temporary change, be renamed federally subsidized furlough benefits.[13]

Paying furloughed employees directly through the existing UI system may be easier than channeling the dollars first from the Small Business Administration (SBA) to businesses and then from businesses to their employees.

Since each state already maintains the apparatus to evaluate UI claims and process payments to recipients, the UI system would likely work more efficiently than developing and implementing a small business interruption loan program.[14]

In contrast, developing and implementing a new, large-scale small business loan-guarantee program may prove to be challenging operationally and proceed slowly. Economists are already aware of the "long and variable lags" in using countercyclical macroeconomic policies, at least since Milton Friedman's seminal book in 1960. For example, it took seven weeks from the time the 2009 Recovery Act was introduced as a House bill until one component, the payroll tax reductions, began lifting most workers' take-home pay.[15] Fourteen weeks elapsed between that bill's introduction and when stimulus checks to Social Security recipients, another component of the Recovery Act, began being sent out.

The federal agency that would likely be charged with implementing the proposed loan-guarantee program is the SBA. The SBA's most sizeable annual appropriations over at least the past 20 years were $2.4 billion in 2018. Setting up this new small business interruption loan program may take much longer than seven to 14 weeks, as was the case of seemingly simpler Recovery Act programs described above.

Besides the loan program, the CARES Act also contains two tax rebate programs aimed at individuals. Each is budgeted at $250 billion. According to the Chicago Tribune, the timing of the payments would consist of "a first set of checks issued starting April 6, with a second wave in mid-May."[16] Payment would depend on family size and income. Each payment would be up to $1,200 for a single person ($2,400 for married person filing jointly), with an additional $500 per each child they have.

This would provide additional income for UI recipients. For individuals who lose their jobs, perhaps because their employers did not qualify for the loan program, the direct payments may be insufficient to cover most of their lost income. Recall from Table 1 that a medium-income, unmarried Arkansan with no dependents and who makes $1,000 per week would lose $6,588 after netting out UI benefits under the current system. A $1,200 stimulus check would offset only about one-fifth of the lost income. According to the current proposal, this unemployed person might receive a second check in mid-May; however, more than 60% of this worker's income would be forgone during the unemployment spell inclusive of both cash transfers.

UI Enhancements vs. Small Business Loans

At the current statutory replacement schedules, the cost of losing one's job even for a few months could generate much hardship. Moreover, Americans in the range of incomes considered here often live paycheck-to-paycheck. In a tight labor market, a recently unemployed worker might be able to find a job relatively quickly.

However, at a time when firms are laying off rather than hiring (as the U.S. economy seems to be moving toward), securing a new job may be very difficult.

The fall in income under these various scenarios would likely qualify at least some of these individuals for additional benefits, such as Medicaid or SNAP,[17] which would alleviate some of the financial stress. However, this article focuses on the lost wages.

Suppose each state enacted a UI benefits policy in which the maximum cap were set at $1,450 per week (the analogous value in the Treasury proposal) and the replacement rate were set at 90%. Figure 1 plots the UI schedule under this enhanced, nationally uniform UI system and that of the current system in a particular state (in this case, Indiana).

Figure 1

Weekly Unemployment Insurance Benefit Schedules: Possible Enhancement versus Example of Current System
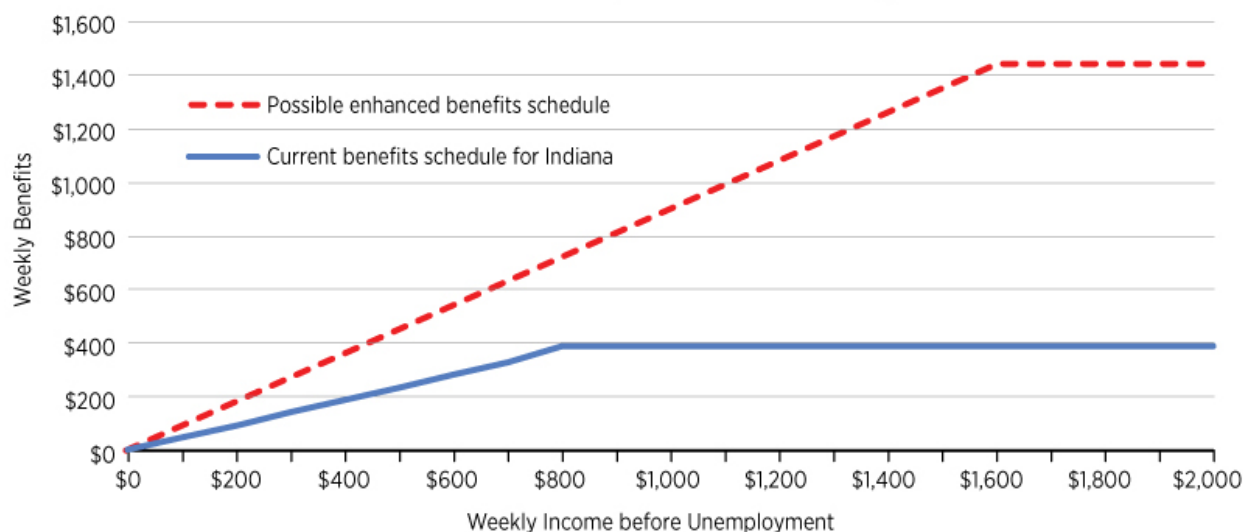
SOURCES: Indiana government website and author's calculations.
NOTES: The solid line represents the current UI benefit system in Indiana (as an example): a 47% replacement rate, with a benefit cap of $390 per week. The dashed line represents a potential UI schedule with increased generosity: 90% replacement rate, with a benefit cap of $1,450 per week.

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Table 2 shows the lost income in the low- and medium-income scenarios under such a proposal. Because of the higher cap and replacement rate, there would be less lost earnings across the board. For the hypothetical low-income Arkansan, the lost income would fall from $3,600 to $720. For the medium-income Arkansan, the lost income would drop from $6,588 to $1,200.

Table 2

Lost Income during 12 Weeks of Unemployment

	Current System		Enhanced Benefits System	
State	Low-Income Worker	Medium-Income Worker	Low-Income Worker	Medium-Income Worker
Arkansas	$3,600	$6,588	$720	$1,200
Illinois	$3,816	$6,360	$720	$1,200
Indiana	$3,816	$7,320	$720	$1,200
Kentucky	$2,736	$5,376	$720	$1,200
Mississippi	$4,380	$9,180	$720	$1,200
Missouri	$3,456	$8,160	$720	$1,200
Tennessee	$3,900	$8,700	$540	$900

SOURCES: State government websites and author's calculations.

NOTES: See notes with Table 1.

The Price Tag

To compute the cost of such an enhanced UI program, one would need to assume three things: the duration of the program, the take-up rate (i.e., how many individuals would become unemployed) and the average weekly benefits (AWB) paid. Let us suppose that the program lasted six months and that the unemployment rate (or combined unemployment-furlough rate, if you like) was 15%.

Predicting the AWB paid is particularly challenging. Because of the nonlinearity in the replacement formula, the predicted AWB will depend upon where claimants lie on the pre-unemployment earnings distribution. If most people claiming UI are on the low end of the earnings distribution, AWB will be lower. I constructed a simple calculation using the earnings distribution in the fourth quarter of 2019 and hypothetical job-loss earnings distribution based on past employment-to-unemployment job separation probabilities. According to this calculation, the total cost would be $276 billion.[18]

These numbers are meant only as a starting point. Economists at the U.S. Department of Labor and state departments of labor and many academic researchers have access to better data and models than I do. They would be able to put together better cost estimates than I can.

Health Insurance

Employer-provided health insurance is commonplace in the United States. Laid-off (or furloughed) workers, even if they receive higher UI replacement rates, would (or at least could) lose their insurance. COBRA already allows for continuation of coverage for workers losing their jobs. This law, however, requires worker-paid premiums. To reduce that cost, the federal government might temporarily cover 90% of the COBRA premiums for the unemployed or furloughed. Calculating an appropriate size of such a program, even in a rough sense, is difficult at this stage. For a baseline, suppose the allocation were $75 billion. (This figure is equal to three times

the amount spent on COBRA subsidies in the 2009 Recovery Act.) In this case, the total cost of enhanced UI and COBRA support would be $351 billion.

Implementation

First, legislation would be needed to authorize the funding to cover the UI system and provide COBRA subsidies. The Department of Labor could offer, to each state government, to take over the full responsibility for funding that state's UI program along with the agreement that the state follows the federal government's new earnings replacement schedule. The agreement could be temporary, say four to six months.

Although state governments would continue to evaluate claims, issue checks and direct deposits, and do other related administrative work, the replacement rates would be set by and the full cost would be borne and deficit-financed by the federal government.

Since the federal government would assume the cost of the program, employers would not see an increase in their unemployment tax; moreover, the government might choose to place a moratorium on this tax for the duration of the program.

Some of the restrictions put on UI claimants would no longer be appropriate for a federally subsidized furlough program. These include a one-week waiting period and job search requirements. Some of these rules, such as the waiting period, have already been removed in at least some states, and other rules may need to be adjusted for the duration of the program.

Federally subsidized COBRA premiums have already been implemented once, as part of the 2009 American Recovery and Reinvestment Act. Past experience with this subsidy should help in getting it set up quickly.

Funding

One way to fund the above proposal to expand UI and COBRA benefits would be to simply add it as additional spending to other COVID-19 related fiscal actions. If, however, legislators did not want to add $351 billion to the total price tag on all COVID-19 legislation, they could carve $351 billion out of the existing proposal currently working its way through Congress.

The Senate bill is estimated to cost more than $1 trillion, according to media reports. It contains two cash transfer payments to households, each priced at $250 billion. One payment is set to occur in early April and the second is set to be paid in May, if macroeconomic conditions then warrant it.

Eliminating the second of these payments would free up monies to then pay for the majority of the proposal described in this article. An additional $101 billion could be allocated away from the small business interruption loan program proposal currently before Congress.

Reducing the small business loan program might be appropriate since much of the loan program's funds are intended to cover affected small businesses' payrolls. With the enhanced system described in this article, these workers could instead be moved to a federally subsidized furlough program, and therefore fewer funds would be needed for the loan program.

Two Remaining Issues: Incentives and Job Separations

One potential downside risk to this policy is that increasing the replacement rate might substantially increase the incentive for workers in unaffected or essential industries to become unemployed and thereafter remain unemployed.[19] High replacement rates and other generous unemployment benefits are sometimes cited as explanations for high perpetual rates of unemployment experienced in some European countries over the past

several decades.[20] Limiting the duration of unemployment benefits, as is done currently in the United States, and returning replacement rates to their pre-crisis values after the economic impact of the virus pandemic has waned could be valuable in mitigating this downside.[21]

Conclusion

At replacement rates more generous than the current levels, state unemployment benefits offer a fast, targeted means to help offset the income loss of laid-off and furloughed workers in industries disrupted by the actions to combat COVID-19. Moving workers from payrolls to the UI rolls would ease cash-flow concerns of struggling firms. On the downside, high replacement rates may reduce the chance that these individuals fill vacancies in essential industries. High replacement rates may be politically difficult to reduce once the COVID-19 crisis passes.

Government-guaranteed payroll loans to businesses designed to keep workers from being laid off similarly help affected workers in these industries. This approach would probably help maintain worker-firm relationships more than UI. On the downside, these loans introduce firms as "middlemen" in getting aid from the government to workers, a feature that is not present with UI. Thus, the payroll loan approach may be slower. As with higher UI replacement rates, payroll loans may keep people from filling job openings in essential industries.

Endnotes

1. For a broader look at the potential economic impact of the coronavirus, see Bullard.
2. Headquartered in St. Louis, the Eighth Federal Reserve District includes all of Arkansas and parts of Illinois, Indiana, Kentucky, Mississippi, Missouri and Tennessee.
3. See Dupor's March 17 blog for an overview of how one might approach the economic issues surrounding the current situation.
4. They are subject to caps and other restrictions.
5. See U.S. Department of Labor.
6. Calculations are based on website formulas accessed on March 18, 2020.
7. This would be the case if the individual earned $15 per hour and worked 40 hours per week.
8. I assume the individual is unmarried and has no dependents in order to do the calculations. This assumption is made because a few of those states condition UI benefits on those criteria.
9. Note that Missouri's webpage states: "This calculator computes only an estimate based on the wage information you entered, and does not guarantee any benefit amount, or even if you will be eligible for unemployment benefits. Eligibility and benefit amounts depend on a number of factors, so if you do receive unemployment benefits, your weekly benefit amount may be greater or lesser than the amount the calculator shows." Every state's website had a similar qualification. Thus the values presented in this example are also subject to this qualification.
10. Some of the changes consisted of cost sharing between the federal and state governments, but were not relevant from the recipients' perspective. See Vroman for a clear description of the UI aspects of the 2009 Recovery Act.
11. See congress.gov/bill/116th-congress/house-bill/6201/text.
12. See congress.gov/bill/116th-congress/senate-bill/3548/text.
13. St. Louis Fed President James Bullard has suggested calling this "pandemic insurance." See Bullard.
14. For example, the SBA had difficulties approving disaster loans in a timely fashion after Hurricane Sandy. See washingtonpost.com/business/on-small-business/disaster-loan-disaster-sba-much-too-slow-to-respond-to-hurricane-sandy-probe-finds/2014/10/26/5d6ce70c-5b1f-11e4-8264-deed989ae9a2_story.html.
15. See Dupor's March 18 blog post.
16. See chicagotribune.com/coronavirus/ct-nw-coronavirus-congress-economic-response-bill-20200318-35z4ir3marbdxnig64v3qam4eu-story.html.
17. It may be the case that the low-income individual would have had access to some of these entitlement programs even in absence of the job loss.
18. The calculations are available from the author on request.

19. For academic work that supports the position that incentive costs of generous UI benefits are small, especially during recessions, see Birinci and See.
20. See, for example, Ljungqvist and Sargent.
21. Limiting the duration of the high replacement rate policy to a specific number of months or using an unemployment/furlough rate trigger written directly into the enabling federal legislation are two ways to accomplish this.

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Trends in Startups' Share of Jobs in the U.S. and Eighth District

KEY TAKEAWAYS

- Despite their small size, startups have traditionally been a key source of jobs. Has their role changed in recent years?
- An analysis of firm-level data for the U.S. and the Eighth District indicates that startups have accounted for a shrinking share of all U.S. jobs since 1994.
- This pattern of hiring proportionally fewer workers holds for startups in diverse industries, including construction and information.

Sungki Hong , Devin Werner

In recent years, tech giants have rapidly transformed our lifestyle. We take Uber rides for travel, stay in Airbnb rentals for vacation and search Google for information.

Most of these household names were small firms a decade ago, but these corporations are now big employers in the labor market. In 2019, there were 22,263 employees at Uber, 12,736 at Airbnb, and 114,096 at Google, now a subsidiary of Alphabet.

Startups clearly have the potential to become superstar firms and drive economic growth in the future—and even from the start, startups consistently create more jobs on net than older firms.[1] It is obvious, then, that startups have an important role in the current economy. But what does startup activity look like today?

In this article, we provide an overview of startup employment dynamics between 1994 and 2018, which are the earliest and latest years available in our sample. The scope of analysis is comprehensive and does not focus on only tech industries. The study starts at the national level and digs deeper into the seven states that are part of the Federal Reserve's Eighth District.[2]
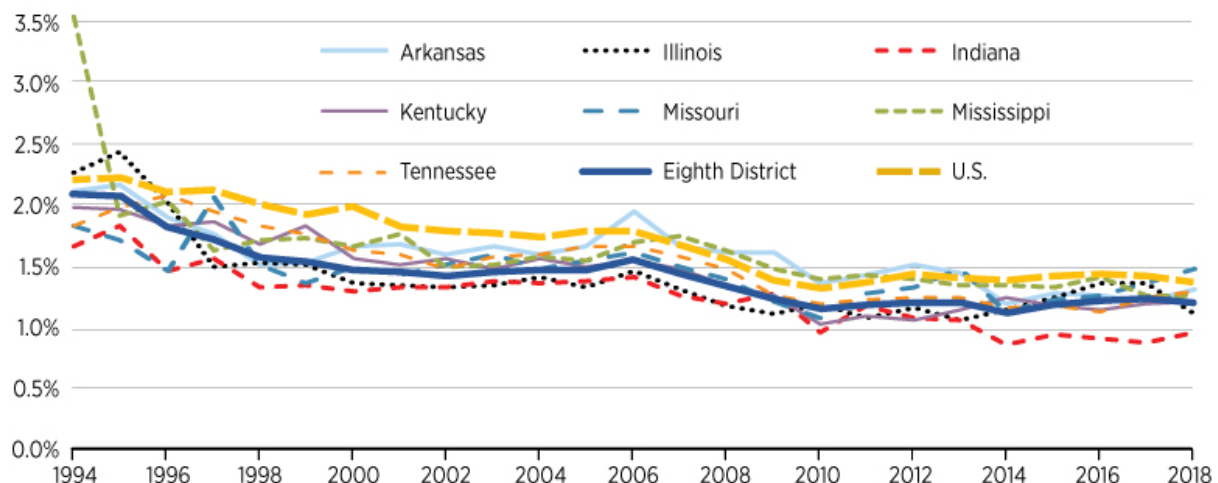
We use data from Business Employment Dynamics (BED), a program of the U.S. Bureau of Labor Statistics. The program covers about 97% of all civilian wage and salary employment in the country. The BED data set contains annual net job gains, gross job gains and gross job losses by state, firm industry, firm age[3] and firm size.[4] A firm is a legal business entity issued an Employer Identification Number (EIN) by the IRS, and a startup is a firm less than 1 year old. Numbers of employees are counted based on firm-reported filled jobs, whether full- or part-time and temporary or permanent.[5]

Overall Startup Employment

Figure 1 displays the startup employment share between 1994 and 2018 at various regional levels—the U.S. as a whole, the individual states included in the Eighth District, and the District as a whole.

Figure 1

Startup Employment as a Share of Jobs

Arkansas · Illinois · Indiana · Kentucky · Missouri · Mississippi · Tennessee · Eighth District · U.S.

SOURCES: Business Employment Dynamics, Quarterly Census of Employment and Wages, and authors' calculations.
NOTES: The share is the number of workers employed by startups divided by the overall number of workers in the noted geographical area. The Eighth District is defined, as elsewhere, as the sum of the seven states that are part of the District: Arkansas, Illinois, Indiana, Kentucky, Mississippi, Missouri and Tennessee.

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One striking feature of the figure is that the startup employment share has been declining for more than a decade. At the national level, the fraction of employees in startups was 2.2% in 1994 but decreased to 1.4% in 2018. Although the 2007-2009 financial crisis accelerated this decline, the secular trend actually started long before the crisis. On the other hand, post-crisis startup rates have been relatively stable but remain much lower than their historic levels.

A closer look into the Eighth District reveals a similar pattern: The fraction goes from 2.1% in 1994 to 1.2% in 2018. The decline in startup employment share also holds for every District state. Therefore, the decrease in startup employment is not restricted to one specific region, at least in the District.
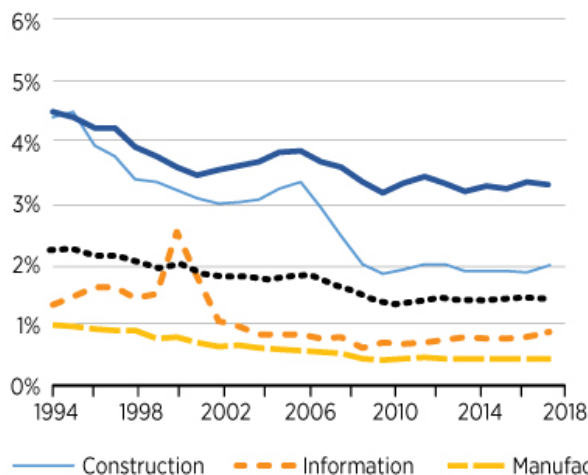
Startup Employment by Industry

What could be driving the downward trend in startup employment? With the industry-level data, we can examine whether a particular industry is a leading cause. Figure 2 displays the startup employment share by industry as defined by the North American Industry Classification System. Figure 2A depicts the fraction of workers employed by startups in the U.S., while Figure 2B shows the employment share in the District. Instead of presenting results for all industries, we selected the following four representative industries: construction, and leisure and hospitality, whose startups account for high percentages of employment; and information and manufacturing, whose startups account for low percentages.
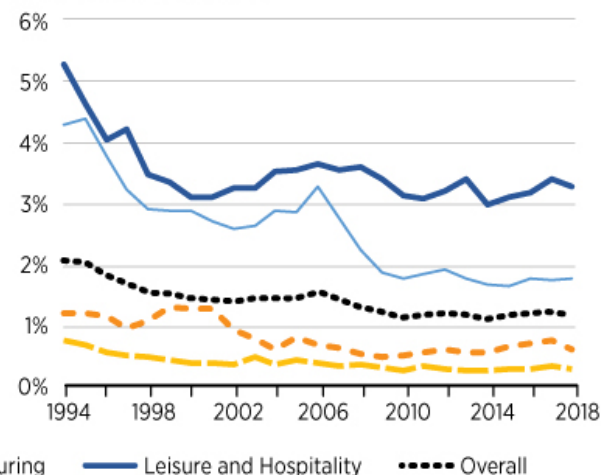
Figure 2

Startup Employment as a Share of Jobs by Select Industries

A. For the U.S.

B. For the Eighth District

Construction ——— Information – – – Manufacturing – – Leisure and Hospitality ——— Overall •••••

SOURCES: Business Employment Dynamics, Quarterly Census of Employment and Wages, and authors' calculations.

NOTES: The share is the number of workers employed by startups divided by the industry's number of workers in the noted geographical area. The Eighth District is defined, as elsewhere, as the sum of the seven states that are part of the District: Arkansas, Illinois, Indiana, Kentucky, Mississippi, Missouri and Tennessee.

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Figure 2A shows that all four U.S. industries experienced shrinkages in startup workforce share, especially industries with high initial startup employment shares. For example, the construction industry nationwide started with 4.4% of workers employed by startups but ended with 1.9%, about a 2.5 percentage point decrease. In contrast, the manufacturing industry's fraction went down only from 1.0% to 0.4%, about a 0.6 percentage point decrease. Although the magnitudes across industries are slightly different, a similar trend also holds at the District level.

Additionally, we see that industries have gone through their own idiosyncratic phases of rises and falls. After the housing bubble burst in 2008, the construction industry experienced large decreases in the fraction of workers in new firms, both at the national and the District level. The bursting of the dot-com bubble in 2000 had a similar impact on the information industry, whose fraction increased during the bubble and was soon followed by a more-than-offsetting decrease.

This pattern is hardly surprising; while recessions affect employment for firms of all sizes and ages, it is well known that smaller and newer firms are hit harder by economic downturns.[6] The dot com's boom-bust cycle was more evident at the national level than at the District level, possibly because there were fewer information-related firms in the District.

Conclusion

Startups are important for economic growth, but the U.S. startup employment share has declined from 2.2% in 1994 to 1.4% in 2018. While it has stabilized somewhat after the Great Recession, this share remains low by historic standards, and the shrinking began long before the recession. A similar trend holds in all seven states

that are part of the Federal Reserve's Eighth District. We also found that the construction industry and leisure and hospitality industry contributed to the decline more than did the rest of the economy.

Future research should study why startups in these sectors are employing proportionally fewer workers. While the BED data show a decline in absolute startup employment similar to the decline we note above, for instance, they do not explain the entire drop in the share of jobs, opening questions both about a decline in startups and about a change in employment dynamics among aging firms that must be explained.

Endnotes

1. See, for example, Dvorkin and Gascon.
2. These seven states are: Arkansas, Illinois, Indiana, Kentucky, Mississippi, Missouri and Tennessee. The Eighth Federal Reserve District, except for Arkansas, overlaps only partially with the political borders of the states; for example, eastern Missouri is included in the District, while western Missouri is not. Nevertheless, we conduct our analysis as if the District comprises these seven states in total, since the data are aggregated at a state level.
3. The age of the firm is the age of the oldest establishment within a firm, in which establishment age is the difference between the reported period and the first time an establishment reported positive employment.
4. The firm size is the total employment from all establishments under the same EIN (i.e., owned by the same firm). We analyze by "average size," which averages employment in March of the reported year with employment in March of the previous year.
5. A single individual holding multiple jobs could be counted multiple times in the data.
6. See, for example, Şahin et al.

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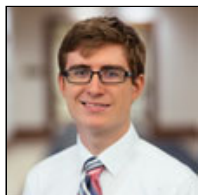
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Same Target, Different Economies: A Cross-Country Analysis of Inflation

KEY TAKEAWAYS

- Many central banks have adopted inflation targeting in recent years. But does a common inflation target across diverse economies make sense?
- Many advanced economies have embraced a 2% target. Yet a cross-country analysis of inflation shows these nations have different patterns of rising consumer prices.
- Evidence of varied inflationary forces raises a question of whether a 2% inflation target is best practice across advanced economies.

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YiLi Chien , Julie Bennett

Over the past three decades, many central banks around the world have adopted inflation targeting—a policy that sets a target (or range) for the country's inflation rate as measured by a specific price index.[1] Many advanced economies, including the United States, the European Union, the United Kingdom and Japan, have set their inflation target at or close to 2%.

Central banks have set their inflation targets low so as to mitigate the costliness of rapidly rising prices, but not too low so as to teeter on the edge of deflation—an economic state that could be even more costly.[2] Throughout most of the past decade, however, inflation rates for several advanced economies have fallen short of their 2% target, sparking a renewed interest in reviewing the optimal level of inflation targets. In practice, the specific 2% inflation target may not be universally optimal. The driving forces behind inflation rates could be quite different across countries; therefore, the implementation of the same monetary policy tools —such as forward guidance or quantitative easing—could have varied effects on inflation rates.

In this article, we examine the inflation contributions of different consumer expenditure categories across several major advanced economies using national consumer price index (CPI) data from the Organization for Economic Cooperation and Development (OECD). The overall CPI reported by the OECD comprises 12 expenditure categories,[3] and the inflation contribution of each category is calculated by the OECD using the category's inflation rate and consumption weight.[4] The inflation contributions across all 12 categories sum to the overall CPI inflation rate. Therefore, we can identify the relative importance of each expenditure category to the overall CPI inflation rate for each country and compare inflation compositions internationally.

Identifying Inflation Components

We use OECD-reported national CPI data for five countries: the U.S., Japan, France, Germany and the U.K. The OECD constructs each country's CPI following the Classification of Individual Consumption According to Purpose (COICOP) as published by the United Nations Statistics Division, and this standardized methodology allows for cross-country comparisons of the data.[5] We use the annual inflation rate and inflation contribution data series at a monthly frequency over the time period of January 2012 to September 2019.[6] The relatively short span of data is due to the limitation of data availability.

The accompanying table reports the average overall CPI inflation rate and the top five inflation contribution components for each country over the time period. For each country, the average overall CPI inflation rate falls below the 2% level by varying degrees, ranging from 1.8% in the U.K. to 0.69% in Japan. For all countries except Japan, "housing, water, electricity, gas and other fuels" expenditures contributed the most to overall inflation. (Japan's highest contributor is "food and nonalcoholic beverages" expenditures.)

Top Five Contributors to Inflation

Country	Average Overall Inflation Rate	Expenditure Category	Inflation Contribution (Percentage Points)	Share of Overall Inflation Rate
U.S.	1.56%	Housing, Water, Electricity, Gas and Other Fuels	1.00	64%
		Miscellaneous Goods and Services	0.21	13%
		Health	0.17	11%
		Restaurants and Hotels	0.16	10%
		Education	0.09	6%
Japan	0.69%	Food and Nonalcoholic Beverages	0.30	44%
		Housing, Water, Electricity, Gas and Other Fuels	0.09	13%
		Miscellaneous Goods and Services	0.08	12%
		Restaurants and Hotels	0.08	12%
		Recreation and Culture	0.05	8%
France	0.94%	Housing, Water, Electricity, Gas and Other Fuels	0.24	26%
		Transport	0.18	19%
		Miscellaneous Goods and Services	0.17	18%
		Food and Nonalcoholic Beverages	0.17	18%
		Restaurants and Hotels	0.15	16%
Germany	1.27%	Housing, Water, Electricity, Gas and Other Fuels	0.37	29%
		Food and Nonalcoholic Beverages	0.21	17%
		Recreation and Culture	0.17	14%
		Transport	0.13	10%
		Alcoholic Beverages, Tobacco and Narcotics	0.10	8%
U.K.	1.80%	Housing, Water, Electricity, Gas and Other Fuels	0.59	33%

SOURCES: Organization for Economic Cooperation and Development, Haver Analytics and authors' calculations.

NOTES: Share of the overall inflation rate is calculated by dividing the inflation contribution by the average overall inflation rate. Miscellaneous goods and services include expenditures such as insurance, financial services and personal care. The calculations are based on data from January 2012 to September 2019.

Restaurants and Hotels	0.25	14%
Transport	0.20	11%
Alcoholic Beverages, Tobacco and Narcotics	0.14	8%
Recreation and Culture	0.13	7%

SOURCES: Organization for Economic Cooperation and Development, Haver Analytics and authors' calculations.

NOTES: Share of the overall inflation rate is calculated by dividing the inflation contribution by the average overall inflation rate. Miscellaneous goods and services include expenditures such as insurance, financial services and personal care. The calculations are based on data from January 2012 to September 2019.

However, this broad housing category's share of overall inflation varies quite a bit. In the U.S., housing expenditures contribute 1 percentage point to the average overall inflation rate, which means that it accounts for 64% of the total 1.56% inflation rate. Meanwhile, in France, Germany and the U.K., the housing component constitutes 26%, 29% and 33%, respectively, of each country's overall inflation rate, and in Japan it constitutes just 13%.

As the inflation contribution of each component is calculated using both its inflation rate and its consumption weight, a component's high inflation contribution could result from its high consumption weight or its high inflation rate. The very high importance of the housing expenditures category in the U.S. appears to result from both factors. The U.S. housing inflation rate (2.7%) as well as consumption weight (36.7%) are both the highest among the five sample countries. The housing consumption weight is especially high in contrast with those of Japan (19%) and France (9.8%).

For the U.S., Japan and Germany, the OECD reports further disaggregated CPI and inflation contribution data for the housing, water, electricity, gas and other fuels expenditure category. Therefore, we can identify which subcomponent[7] drives this category's high inflation contribution for those countries.[8]

In the U.S. and Germany, actual and imputed housing rentals [9] make up the majority of the category's overall inflation contribution, accounting for 0.93 percentage points (59%) and 0.28 percentage points (22%) of each country's overall inflation rate, respectively.[10] In Japan, however, this subcomponent actually contributes a negative amount (–0.05 percentage points) to overall inflation,. Instead, the electricity, gas and other fuels subcomponent drives the housing expenditures inflation contribution in Japan, accounting for 0.12 percentage points (17%) of the overall inflation rate. This relatively high inflation contribution may be due in part to Japan's shift away from nuclear energy toward coal and natural gas.

Differences in Inflation Contribution

Though the housing expenditures category ranks highly across all countries in its inflation contribution, the importance of most other expenditure categories varies quite a bit. For example, health expenditures contribute third most to inflation in the U.S., but for the other countries, it falls among the bottom four contributors. This difference might arise because of the fact that the U.S. has a more privatized health care system than the other four countries and therefore less government regulation on increasing health care costs.

Turning to transport expenditures, this category contributes a positive amount to inflation in all countries except the U.S. In the European countries, this contribution accounts for a relatively high share of the overall inflation rate, ranking No. 2, No. 3 and No. 4 in overall inflation contribution for France, the U.K. and Germany,

respectively. In the U.S., however, transport actually contributes a negative amount (–0.14 percentage points) to inflation. That is, prices for goods and services related to transport in the U.S. have actually fallen over the sample period, resulting in deflationary pressure.

For all sample countries except the U.K., the OECD reports further disaggregated CPI and inflation contribution data for one subcomponent of the transport category: fuels and lubricants for personal transport equipment, which includes motor vehicle gasoline. In the U.S., the average inflation contribution of this subcomponent over the sample period is –0.18 percentage points, indicating that this subcomponent accounts for a substantial portion (128%) of the overall negative inflation contribution from the transport category.[11]

Meanwhile, in the other countries, this fuel subcomponent contributes relatively little to the overall inflation contribution of the transport category, accounting for 7.5% of the transport inflation in Japan, 17% of transport inflation in France, and –23% of transport inflation in Germany. We likely see this discrepancy because gasoline prices in the U.S. have dropped more in recent years than they have in other countries, and as the U.S. is a more car-dependent country, the lower gas prices have had more bearing on overall inflation.

Our findings suggest that there is a nontrivial degree of country-level heterogeneity in the driving factors of inflation. These cross-country differences may be due to a variety of factors, such as shifting production technologies or government regulation. In light of these varied inflationary forces, the question arises whether a standard 2% inflation target is best practice across advanced economies, and future work should consider how various aspects of monetary policy affect different components of inflation.

Endnotes

1. See Hammond.
2. See Billi and Kahn. Using a New Keynesian framework, Coibion, Gorodnichenko and Wieland found little evidence to support the current 2% inflation targets, and their results suggest that the optimal inflation rate may be less than 2%.
3. These 12 categories are labeled as follows: food and nonalcoholic beverages; alcoholic beverages, tobacco and narcotics; clothing and footwear; housing, water, electricity, gas and other fuels; furnishings, household equipment and routine household maintenance; health; transport; communication; recreation and culture; education; restaurants and hotels; and miscellaneous goods and services.
4. More detail on the OECD calculation of inflation contribution can be found here.
5. Note that the OECD-reported CPIs are not the official price indexes by which each country gauges its inflation target, but the inflation rates reflected by the OECD CPIs closely resemble those reflected by the country-reported CPIs.
6. These data reported by the OECD are not seasonally adjusted, and the CPIs have a base year of 2015.
7. These subcomponents are labeled as follows: actual and imputed housing rentals; dwelling maintenance and repairs; water supply and related services; and electricity, gas and other fuels.
8. The OECD does not report comprehensive disaggregated subcomponents for France (its actual and imputed housing rentals category covers only actual housing rentals) and no further disaggregated subcomponents for the U.K.; therefore, we omit the two countries from this comparison.
9. Imputed housing rentals capture the value of the housing services consumed by individuals who own their living space. These housing services are assumed to be equal to the value of the property if it were on the rental market. For more information, see the U.N. methodology.
10. For the U.S. and Japan, actual and imputed housing rentals are reported separately, but for Germany they are reported in aggregate; therefore, we compare the aggregate category across countries.
11. As the overall inflation contribution of the transport category is –0.14 percentage points, it can be inferred that most, if not all, of the other unreported transport subcomponents contribute a positive amount to inflation to offset the –0.18 percentage points contribution of fuels and lubricants for personal transport equipment.

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Forecasters Eye Uncertainties When Sizing Up U.S. Economic Outlook

KEY TAKEAWAYS

- The U.S. economy continues to expand at a modest pace, but forecasts must also take into account uncertainties and risks, both upside and downside.
- Consumer spending and the healthy labor market are key sources of strength, but manufacturing and business capital spending have been weak.
- The coronavirus outbreak offers a new risk. This outbreak could weigh on the global economy given the importance of China's economy.

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Kevin L. Kliesen

The first of the year is a natural time for forecasters to take stock of where the economy has been and where it might be going over the next year or so. But peering over the horizon becomes more difficult during times of heightened uncertainty, which has been a key part of the economic landscape during the past several years. And now another source of uncertainty has been added: the COVID-19 (coronavirus) outbreak. With that setup, it's important to take stock of the things we know and the things we don't know very well—if at all.

What Do We Know?

By most metrics, the economy continues to expand at a modest pace. In 2019, real gross domestic product (GDP) increased 2.3%, which was modestly slower than growth in 2017 (2.8%) and in 2018 (2.5%). The unemployment rate continues to drift lower: It averaged 3.5% in the fourth quarter of 2019, the lowest rate in more than 50 years. Despite solid growth and a falling unemployment rate, the Federal Open Market Committee's preferred inflation rate—the headline personal consumption expenditures price index—rose only 1.5% in 2019, a modest step-down from 2018's inflation rate (1.9%).

Will these good times persist in 2020? One of the first things forecasters do is to assess the economy's momentum. If the data are uniformly good or have consistently been better than expected, that would be a signal of forward momentum. While never routine nor easy, gauging economic momentum is chiefly done by monitoring the incoming data flows and financial market developments.

First, consumer spending remains a source of strength for the economy, though it was not as strong at the end of 2019 as it was in the middle of the year. The second thing we know is that the labor market remains strong. Job gains were stronger than expected in January—rising by 225,000. Moreover, the strong labor market is

continuing to draw in workers from the sidelines. Both the labor force participation rate and the employment-to-population ratio rose to multiyear highs in January 2020. A healthy labor market lifts all boats.

Two other developments are key to the outlook—one signaling optimism and the other registering a note of caution. Regarding the former, housing—which has struggled in recent years—appears to have turned the corner. Both new-home sales and new housing construction (starts) in 2019 were the strongest in a dozen years. Regarding the latter development, manufacturing and business capital spending (fixed investment) have been weak parts of the economy. Importantly, though, the industrial sector's weakness has yet to derail growth in the services sector. There were signs of a manufacturing rebound in December and January, perhaps because the recent trade agreement with China raised expectations of reduced uncertainty and faster export growth.

The final thing we know is that financial conditions and the stance of monetary policy are supportive of further growth. Federal Reserve Chair Jerome Powell and other Fed officials have emphasized that the "insurance" rate cuts in 2019 helped to put the economy on a more sustainable footing after last year's recession scare.

Going forward, the consensus of Fed policymakers for the next couple of years is for continued modest real GDP growth (around 2%), a low unemployment rate (below 4%) and an inflation rate at or near the Fed's 2% target. The consensus of private sector forecasters is generally aligned with the view of Fed policymakers. (See accompanying table.) A reduction in trade tensions with China that lowers uncertainty could provide a boost to the U.S. and global economies. This presents an upside risk to the forecast.

What Are Professional Forecasters Predicting for 2020?

	Actual		Forecast
Percent Change (Q4/Q4)	2018	2019	2020
Real Gross Domestic Product	2.5	2.3	2.0
Personal Consumption Expenditures Price Index	1.9	1.5	1.9
Percent (Average, Q4)			
Unemployment Rate	3.8	3.5	3.6

SOURCES: Federal Reserve Bank of Philadelphia and Haver Analytics.

The Unknowns and the Unknowables

But there are also downside risks to the consensus forecast. Some of these risks are known but difficult to accurately quantify. One key risk is the possibility of a recession in 2020. Last year's yield curve inversion suggests that it might be too early to signal the all-clear. The reason is that historically inversions tend to accurately predict that an economy will *eventually* go into a recession. However, they are much less accurate at predicting *when* this will occur. Currently, model-based recession probabilities are elevated, but they are below the levels seen during last fall's recession scare.

One can envision other risks. These include the risk of another debilitating financial crisis or a marked acceleration in federal debt that leads to higher interest rates or inflation. These risks are real but probably small at present. Still, estimating the probability of their occurrence at any point in time is next to impossible. In

this vein, one risk that has unexpectedly cropped up is the threat of a worldwide viral pandemic stemming from the COVID-19 outbreak in China.

From an economic standpoint, this is worrisome because China is the world's second-largest economy. Moreover, with the highly integrated supply chains that U.S. and foreign manufacturers have developed in China, it is possible that a prolonged outbreak—or worse, if the outbreak turns into a pandemic—could have a nonnegligible effect on the U.S. and other major economies. Thus far, though, the baseline case is that, like recent epidemics, the outbreak will be contained during the first quarter of 2020. If so, the economic effects of the virus on the U.S. economy will probably be quite modest.

Kathryn Bokun, a research associate at the Bank, provided research assistance.

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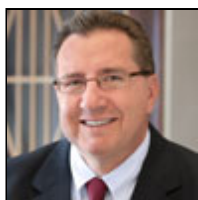
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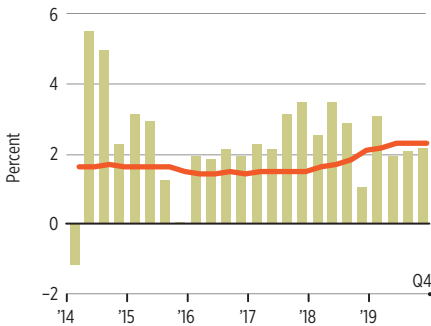# ECONOMY AT A GLANCE

Data as of Feb. 21, 2020.

Real GDP Growth

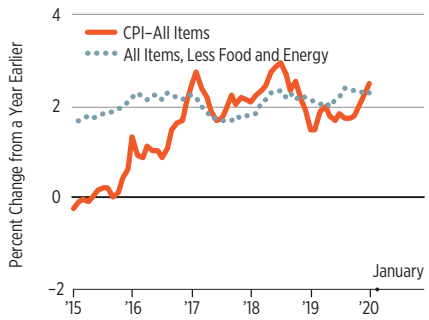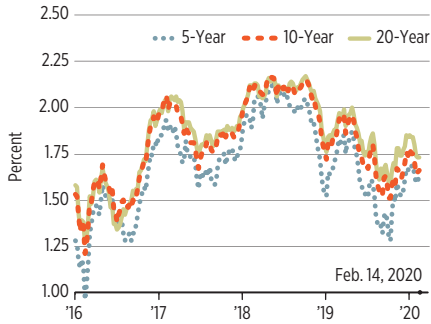NOTE: Each bar is a one-quarter growth rate (annualized);
the red line is the 10-year growth rate.

Consumer Price Index (CPI)

Inflation-Indexed Treasury Yield Spreads

NOTE: Weekly data.

Rates on Federal Funds Futures on Selected Dates
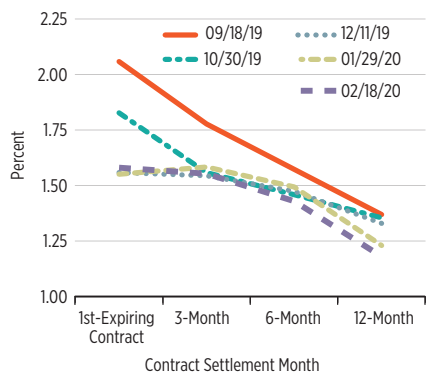
Civilian Unemployment Rate
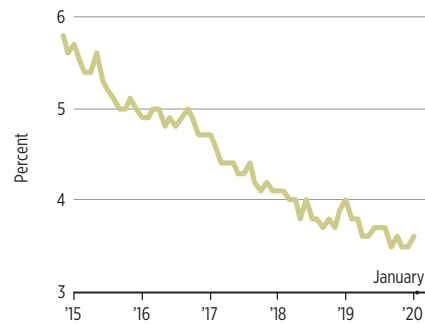
Interest Rates
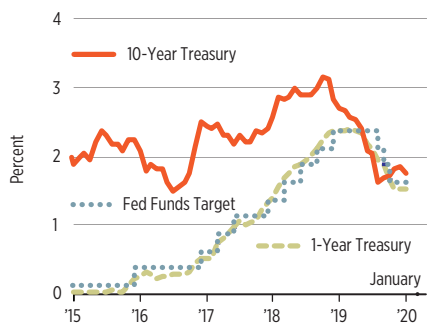
NOTE: On Dec. 16, 2015, the FOMC set a target range for the
federal funds rate of 0.25% to 0.5%. The observations plotted
since then are the midpoint of the range.

U.S. Agricultural Trade

NOTE: Data are aggregated over the past 12 months.

National Average Farm Land Values

NOTE: Data are aggregated over the past 12 months.

U.S. Crop and Livestock Prices

Index 1990-92=100

Crops
Livestock

'04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17 '18 '19

December

COMMERCIAL BANK PERFORMANCE RATIOS

U.S. Banks by Asset Size/Fourth Quarter 2019
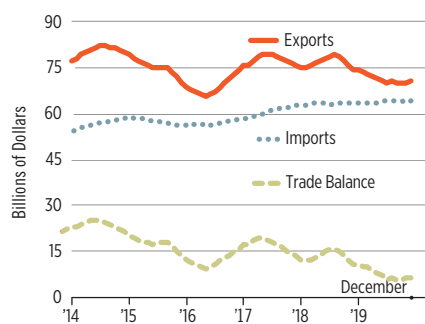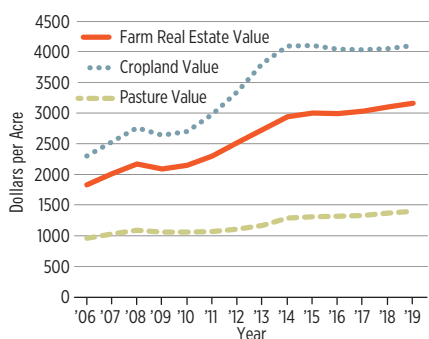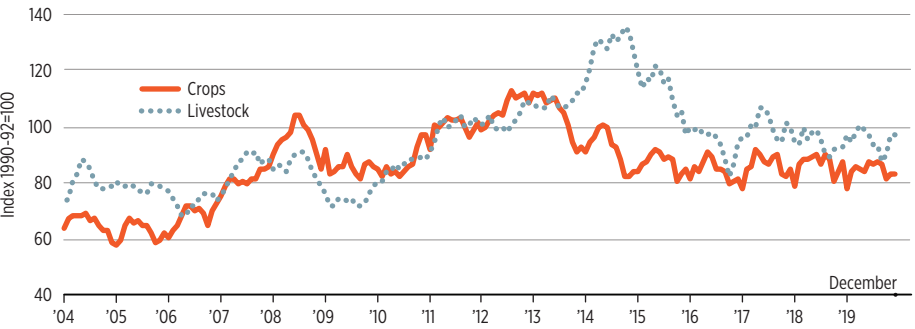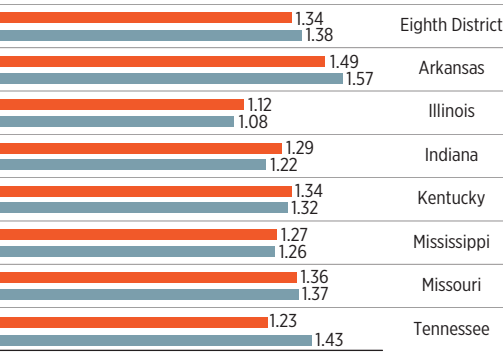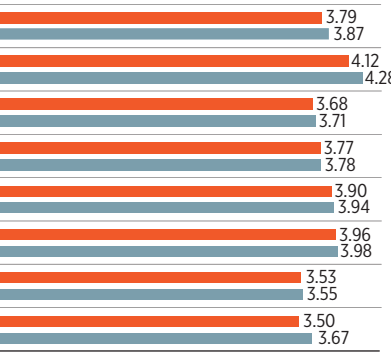
	All	$100 million–$300 million	Less than $300 million	$300 million–$1 billion	Less than $1 billion	$1 billion–$15 billion	Less than $15 billion	More than $15 billion
Return on Average Assets*	1.30	1.19	1.15	1.33	1.26	1.37	1.33	1.29
Net Interest Margin*	3.31	3.98	3.98	3.94	3.95	3.92	3.93	3.19
Nonperforming Loan Ratio	0.85	0.92	0.95	0.82	0.86	0.68	0.74	0.88
Loan Loss Reserve Ratio	1.15	1.32	1.34	1.26	1.29	1.00	1.10	1.17

Return on Average Assets*

	Fourth Quarter 2019	Fourth Quarter 2018
Eighth District	1.34	1.38
Arkansas	1.49	1.57
Illinois	1.12	1.08
Indiana	1.29	1.22
Kentucky	1.34	1.32
Mississippi	1.27	1.26
Missouri	1.36	1.37
Tennessee	1.23	1.43

Percent

■ Fourth Quarter 2019 ■ Fourth Quarter 2018

Net Interest Margin*

	Fourth Quarter 2019	Fourth Quarter 2018
Eighth District	3.79	3.87
Arkansas	4.12	4.28
Illinois	3.68	3.71
Indiana	3.77	3.78
Kentucky	3.90	3.94
Mississippi	3.96	3.98
Missouri	3.53	3.55
Tennessee	3.50	3.67

■ Fourth Quarter 2019 ■ Fourth Quarter 2018

Nonperforming Loan Ratio

	Fourth Quarter 2019	Fourth Quarter 2018
Eighth District	0.67	0.68
Arkansas	0.65	0.67
Illinois	1.09	0.96
Indiana	0.81	0.96
Kentucky	0.67	0.56
Mississippi	0.64	0.61
Missouri	0.52	0.57
Tennessee	0.70	0.70

Percent

■ Fourth Quarter 2019 ■ Fourth Quarter 2018

Loan Loss Reserve Ratio

	Fourth Quarter 2019	Fourth Quarter 2018
Eighth District	0.97	0.99
Arkansas	1.02	1.00
Illinois	1.06	1.05
Indiana	0.60	0.60
Kentucky	1.08	1.12
Mississippi	0.82	0.87
Missouri	1.14	1.20
Tennessee	0.74	0.76

■ Fourth Quarter 2019 ■ Fourth Quarter 2018

SOURCE: Federal Financial Institutions Examination Council
Reports of Condition and Income for all Insured U.S.
Commercial Banks.

NOTE: Data include only that portion of the state within
Eighth District boundaries.

*Annualized data.

For additional banking and regional data, visit our
website at fred.stlouisfed.org.

Data as of Feb. 21, 2020.

Nonfarm Employment Growth/Fourth Quarter 2019

Year-over-Year Percent Change

	United States	Eighth District †	Arkansas	Illinois	Indiana	Kentucky	Mississippi	Missouri	Tennessee
Total Nonagricultural	1.4	0.9	1.3	0.8	0.3	1.2	0.7	1.0	1.5
Natural Resources/Mining	−2.1	−8.1	−5.0	−7.6	−1.6	−20.3	−1.5	−3.8	1.5
Construction	2.0	2.1	5.7	−1.0	5.6	0.6	1.5	3.3	−2.6
Manufacturing	0.5	0.0	1.2	−0.3	−1.4	0.6	1.1	0.0	1.0
Trade/Transportation/Utilities	0.4	0.3	0.9	0.1	−0.9	0.9	1.6	−0.1	1.0
Information	0.8	−0.8	−3.3	−1.2	−3.9	−1.4	−0.6	−2.7	5.0
Financial Activities	1.7	1.5	1.3	0.5	1.5	1.9	2.6	2.3	2.7
Professional & Business Services	1.8	0.7	1.9	0.0	1.7	0.9	−3.5	0.7	2.1
Educational & Health Services	2.6	2.0	2.0	1.9	1.8	4.1	0.7	2.4	1.2
Leisure & Hospitality	2.2	2.4	2.7	2.9	−1.1	2.5	2.5	2.0	4.9
Other Services	1.2	0.7	0.2	1.3	−1.3	2.3	0.3	1.5	−0.1
Government	0.7	0.7	0.0	1.7	1.0	−0.7	0.4	−0.1	0.8

† Eighth District growth rates are calculated from the sums of the seven states. Each state's data are for the entire state even though parts of six of the states are not within the District's borders.
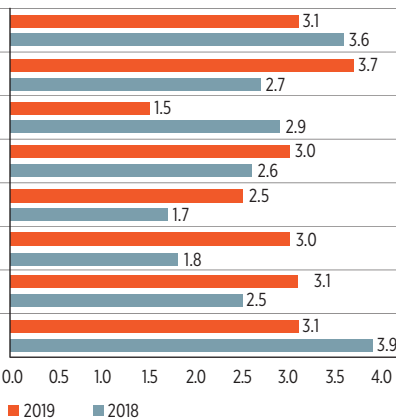
Housing Permits/Fourth Quarter

Year-over-Year Percent Change in Year-to-Date Levels

■ 2019 ■ 2018
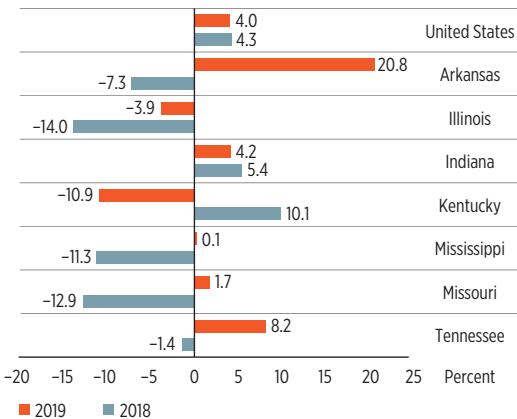
NOTE: All data are seasonally adjusted unless otherwise noted.

Real Personal Income/Third Quarter

Year-over-Year Percent Change

■ 2019 ■ 2018

NOTE: Real personal income is personal income divided by the personal consumption expenditures chained price index.

Unemployment Rates

	2019:Q4	2019:Q3	2018:Q4
United States	3.5%	3.6%	3.8%
Arkansas	3.6	3.4	3.7
Illinois	3.8	4.0	4.3
Indiana	3.2	3.3	3.5
Kentucky	4.3	4.4	4.3
Mississippi	5.6	5.2	4.7
Missouri	3.2	3.2	3.1
Tennessee	3.3	3.5	3.3

District Real Gross State Product by Industry−2018

Information **3.7%**
Trade/Transportation/Utilities
Manufacturing **18.9%**
Construction **3.2%**
Natural Resources/Mining **2.0%**
16.3%
10.5%
Financial Activities **17.6%**
Professional and Business Services **12.0%**
Educational and Health Services **9.7%**
Leisure and Hospitality **4.0%**
Other Services **2.2%**
Government

United States $18.6 Trillion
District Total $2.1 Trillion
Chained 2012 Dollars