

Economic Analysis

Running on fumes: remaining gap in Beveridge Curve a matter of structural forces

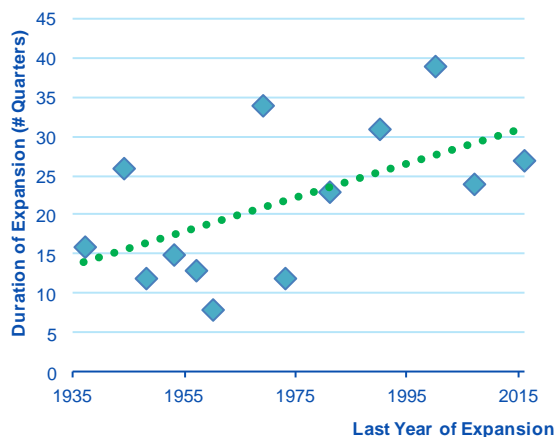
Boyd Nash-Stacey

- **Handful of labor market indicators suggest cyclical expansion losing steam**
- **Matching efficiency, while improving, has failed to recover to pre-crisis levels**
- **More widely available credit and targeted fiscal policy could close the gap**
- **Empowering startup and small business is an available option to policy makers and banks**

As the U.S. economy enters its 28th consecutive quarter of expansion (4th longest since the great depression), there is ongoing debate as to whether labor markets, and for that matter, the broader economy is nearing the end of the expansion cycle. While there is evidence that expansions do not die of old age, there are signs that the labor market recovery is nearing retirement, similar to a growing share of the labor force.¹ For example, a recent report from the BLS suggested that job growth was the lowest in six and half years. Moreover, the auspicious signs of strong flows back into the labor force reversed course dramatically. While these measures can be volatile, there are many signs that cyclical recovery is nearing its peak at a moment when conditions remain below the economy’s pre-crisis potential.

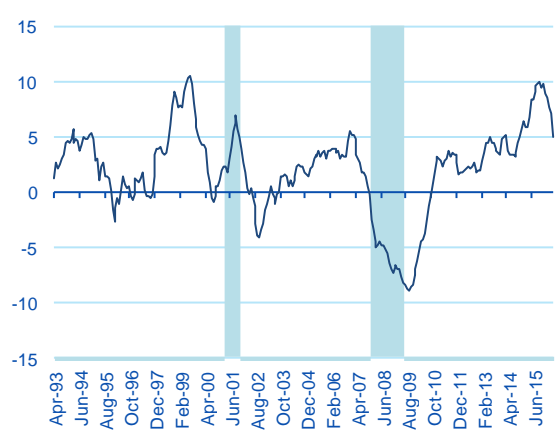
That being said, a broad view of the labor market suggests that conditions could not be better. The economy has added an average of 226K jobs per month since 2014, and the unemployment rate now stands at 4.7%—the lowest rate in nine years. In addition, the number of people choosing to re-enter the labor force and begin work was at an all-time high in April, pushing up the labor force participation rate, a trend that had coincided with wage gains and tighter labor market conditions.

Chart 1
Duration of Expansion Cycles



Source: BBVA Research & Haver Analytics

Chart 2
Labor Force Flows From NILF to Employed*

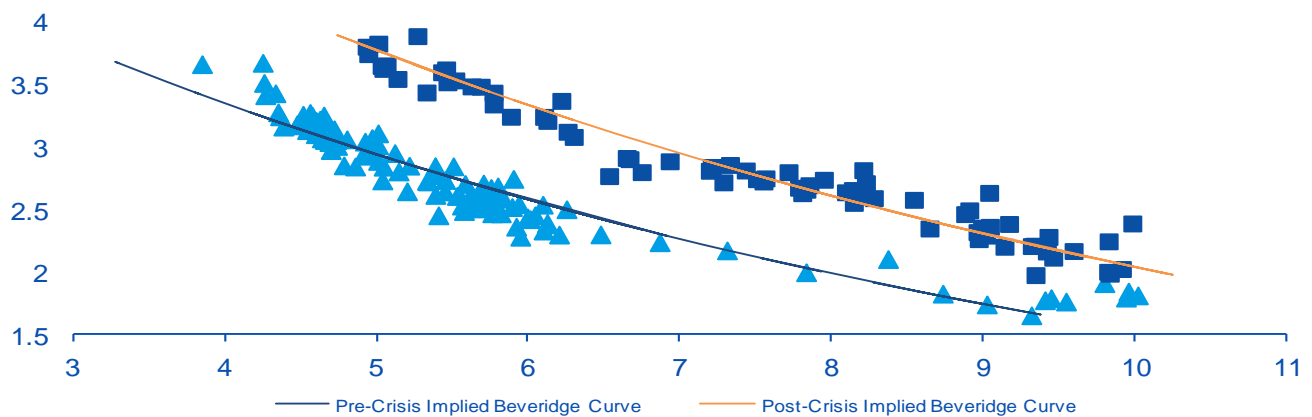


Source: BBVA Research & Haver Analytics
*12-month moving average of year-over-year % change

¹ Other economic indicators also show similar trends

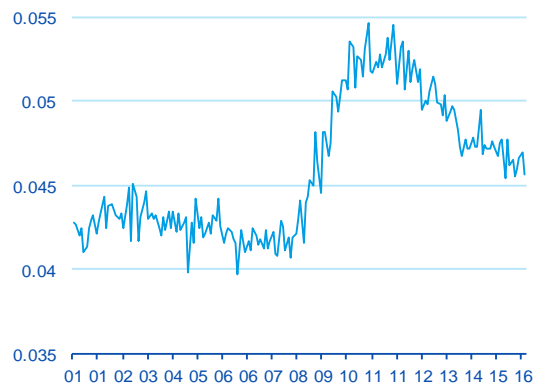
To assess if there is remaining slack in the labor market or if the remaining headwinds are structural in nature, we exploit the empirical relationship between the unemployment rate and jobs vacancies, known as the Beveridge Curve (BC), and a time-series derivation of the gap in the BC referred to as the “curve shifter.” Theory suggests that higher levels of unemployment (larger pool of job seekers) is associated with a lower number of vacancies given that a higher supply of job seekers and greater demand for employees will increase the likelihood of employers finding a match for their vacant positions. As a result, traditional business cycles produce movements along the curve. However, during the recession and recovery, there has been a persistent outward shift in the curve, which is unlikely to be explained by normal cyclical forces.

Chart 3
Beveridge Curve (Job Vacancies & Unemployment Rate)



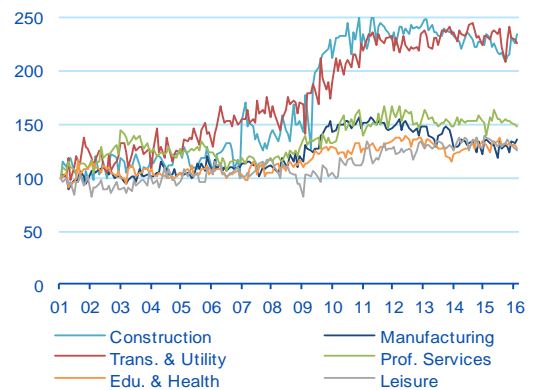
Source: BBVA Research

Chart 4
Beveridge Curve Shifter



Source: BBVA Research

Chart 5
Industry Beveridge Curve Shifter Indexes*

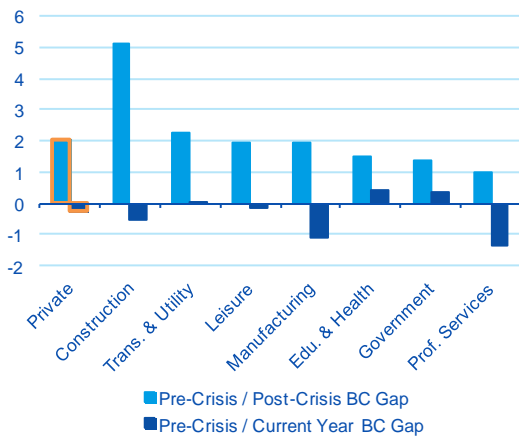


*Index: January 2001=100
Source: BBVA Research

To put this into perspective relative to the pre-crisis, for any given job vacancy rate, there was a 2pp higher unemployment rate (UR). For sectors most acutely impacted by the crisis, such as construction and transportation and utility, the gaps were 5.1pp and 2.3pp larger, respectively. Although there have been some indications of improvements, based on a derivation of this gap or shift in the BC, there appear to be remaining frictions.

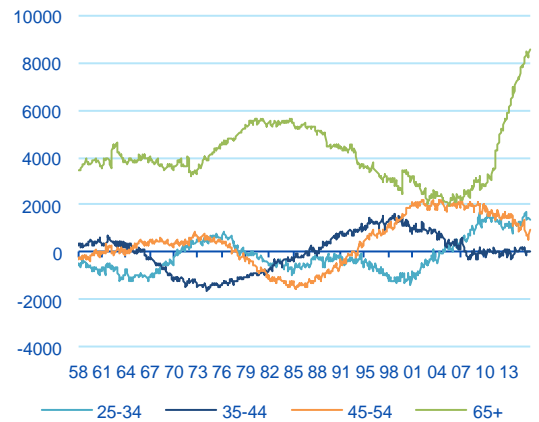
Using this reduced form representation of the curve shifter, we confirm previously established relationships between productivity (Lubik 2012), uncertainty (Liu & Leduc 2015), and secular shifts in labor force activity a la Bova et al (2016). However, we find that access to credit, in addition to significant fiscal policy tightening, are the key elements in the breakdown of labor market matching. Moreover, we find heterogeneous impacts across firm size and age, and industries. In fact, the reduced form representation of the factors that can “shift the curve” a la Pissarides (2000) and Liu & Leduc (2015) shows that despite a handful of cyclical indicators suggesting vast improvements in the labor market, there remain significant structural forces at play.

Chart 6
Beveridge Curve Gap



Source: BBVA Research

Chart 7
10-year Change in Not in Labor Force (K)



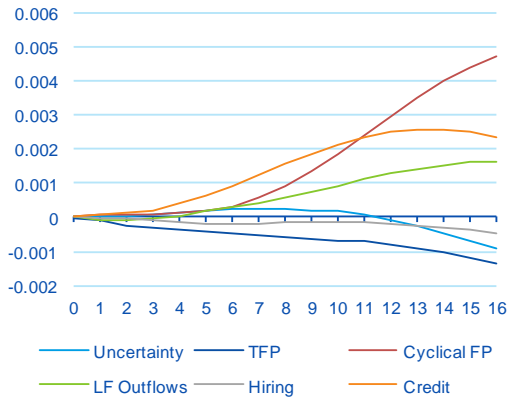
Source: BBVA Research & Haver Analytics

Usual suspects explain remaining gap in labor market

After controlling for changes in unemployment benefits (extension of unemployment insurance claims) due to the financial crisis, we found that there were three key factors that explain the significant and persistent outward shift in the BC: labor force outflows of those 55 and older, cyclical fiscal policy tightening and credit availability. In fact, over a four year cycle, increased willingness of banks to lend in the commercial and industrial (C&I) and commercial real estate loans (CRE) spaces explains 35% of the shift, while cyclical fiscal policy shocks explain 31% of the movement, productivity explains 15%, and retiree outflows from the labor force explain an additional 13%. Unlike Liu & Leduc (2015), we find that policy uncertainty explains only a small portion of the shift (3.0%). On a short time horizon (four quarters), however, productivity plays a more important role in matching, explaining nearly 50% of the shift, with labor force outflows explaining an additional 17%.

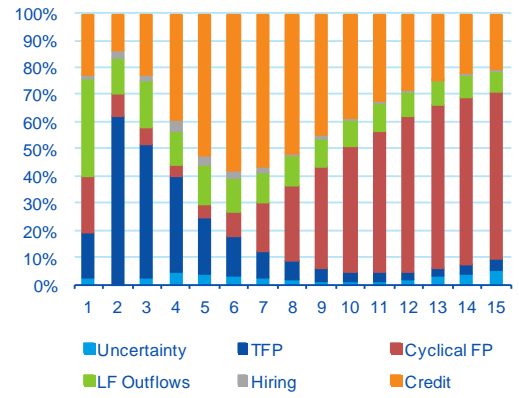
These results imply that factors that are cyclical by nature can have lasting effects on broader labor market activity. A process sometimes referred to as hysteresis. For example, fiscal policy shocks and credit availability tend to ebb and flow with the business cycles, leading to predictable movements along the BC. However, without offsetting shocks to other determining factors, e.g. lower uncertainty or higher productivity, the impact can persist for years, and in some cases never fully recover. In addition, to the extent that credit and fiscal policy have experienced a permanent shift, and the fact that monetary policy is becoming a less effective tool, it will be hard to envisage any significant reduction in the gap in the medium-term.

Chart 8
Response of BC to Macro Factors



Source: BBVA Research

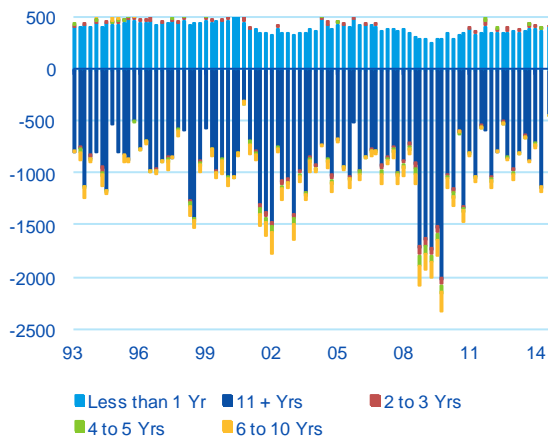
Chart 9
Error Variance Decomposition (% Variance)



Source: BBVA Research

In addition, we tested the impact hiring rates have on BC across firm age, size and industry. In the short run, large and incumbent firms have the largest impact on the BC. However, after six quarters, the impact that startups and small firms have on the BC is more significant and persistent. In fact, at 16 quarters, the impact that startup hiring has on BC compared to old firms is 10 times greater; for small firms, in a similar vein, the impact is 250% greater at 16 quarters versus four quarters from the initial shock. With this in mind, creating an environment that encourages small business formation and risk taking could counteract headwinds plaguing the labor market.

Chart 10
Net Firm-Level Job Creation (K)



Source: BBVA Research & Census Bureau

Chart 11
Firm Hiring Rates (%)



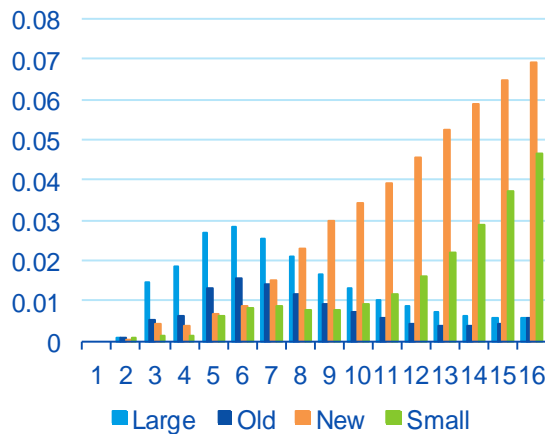
Source: BBVA Research & Census Bureau

Firms at all levels are susceptible to credit cycles and cash flow volatility. However, these factors are amplified for new entrants or small firms, imparting a larger influence on the broader labor market, particularly in keystone sectors such as retail, real estate and construction. In other words, hiring slowdowns in these sectors have the largest and most persistent effect on the BC shifter. For instance, a one standard deviation drop in the hiring rates in these sectors would shift the BC outwards by approximately 10%. To put this into perspective, in the

aftermath of the crisis, the BC shifter increased by 30% from peak-trough. Moreover, unlike other industries that are more apt at weathering cycles and have greater access to credit such as manufacturing, these industries are generally slow to respond and as a result, accumulate losses over a longer time period, and in some cases, never recover.

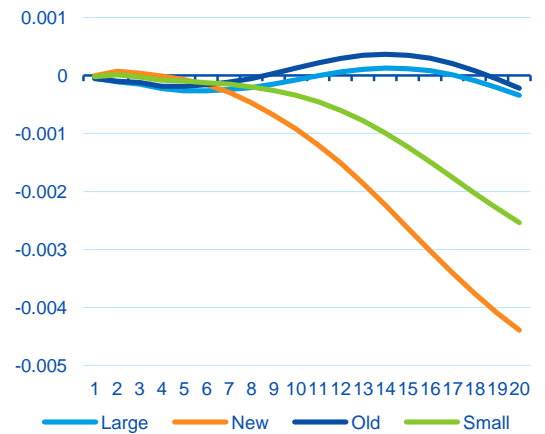
This finding has substantial implication for the health of the broader economy given the fact that small and new firms are the dominant force in net job creation in the U.S.; whereas, larger (500+ employees) and older (11+ years) firms are historically net job destroyers. Moreover, startups and small businesses hire at a rate between 1 to 2.5 times higher than older and larger firms. Labor-intensive service sectors such as retail also have persistently higher levels of hiring, in some cases 50-75bp higher than other sectors. More specifically, startup hiring rates in industries such as finance and insurance, manufacturing and information are 380%, 330% and 270% higher, respectively, than their industry peers. Small and young firms in arts and entertainment, agriculture and accommodation hire at rates 200%-400% higher than the national average. Research has also shown that only 3% of businesses can be classified as “high growth businesses,” but they are responsible for a disproportionate share of growth. Moreover, small businesses are essential parts of U.S. supply chains given that can lower logistical costs, are nimble problem solvers and are better equipped to partner on joint innovations.

Chart 12
BC Response to Shock in Hiring



Source: BBVA Research & Census Bureau

Chart 13
BC Response to Shock to Real Estate Hiring



Source: BBVA Research & Census Bureau
*12-month moving average of year-over-year % change

There is additional upside to targeting small businesses and startups given that as outflows from the labor market intensify, there could be adverse effects for aggregate productivity as new entrants take time to develop skills. As a result, focusing on new business hires could help to accelerate the demographic transition.

In specific instances, it does appear that smaller and more flexible industries have no impact on the BC. For example, lower hiring rates for new finance and insurance companies, new mining companies and small and new management firms can in fact have a positive impact on the labor market. Unlike the majority of small businesses and startups, these sectors tend to be dominated by large incumbents, meaning that the aggregate impact of smaller and younger firms is small. In addition, these sectors are better equipped to weather cycles through productivity gains rather than through investment or hiring. In other words, reducing the size of their labor force or delaying investment decisions has a much smaller impact on output than the other more labor

intensive sectors. Moreover, in the short-run, it is more difficult to scale down quickly in response to a downturn. In perspective, a shock to these sectors would lower the BC shifter by 0.8%, 2.3% and 2.7%. The most recent example is the substantial gain in productivity observed in the oil and gas industry that occurred following the drop in oil prices.

While large firms' hiring rates influence the BC, the impacts on the labor market are less severe and not long-lasting. For example, while drops in large construction firm hiring rates shift the curve outward, the impact is one-fourth that of small and new firms. Likewise, for retail trade, although there is a delayed reaction, there is a significant gap between the impact of large incumbents and small startups on the BC.

No easy solutions for remaining imbalances

At the peak of the crisis, there were hypotheses put forward to explain what was believed to be a structural shift in the labor market. Some research suggested that structural factors explained the large permanent outward shift, while others suggested that the depth and severity of the shocks were better able to explain the magnitude and persistence in the unemployment rate. Others such as Bova, Jalles and Kolerus (2016), based on a sample of developed economies (OECD), found that expanded unemployment insurance benefits and labor taxation contributed to lower post-crisis matching rates. However, U.S. Google Job Search Index (GJSI) data (Baker and Fradkin 2015), and the time use survey data (Krueger 2008), found no statistically significant relationship between more generous unemployment insurance and reduced job search intensity. Secular movements away from low-skilled goods producing sectors to higher-skilled occupations were also cited as factors that could explain the shift. In fact, Barnichon et al (2012) found that a nontrivial amount of the shortfall in hires in vacancies and the outward shift in the BC can be attributed to frictions in the construction, manufacturing and trade and transportation sectors.

In terms of search intensity, Davis, Faberman and Haltiwanger (2012), using establishment level data, found that changes in recruiting intensity can explain weaker matching and explain fluctuations in hiring. Likewise, research from Albrecht & Vroman (2002) suggests that a shift in the supply and demand of high-skilled workers in an environment in which high-skilled workers do not seek out low-skilled positions can lead to persistently higher unemployment and lower matching for low-skilled workers. Hobijn (2012) also found that changes in the mix of vacancies and hires explain part of the weak post-crisis matching.

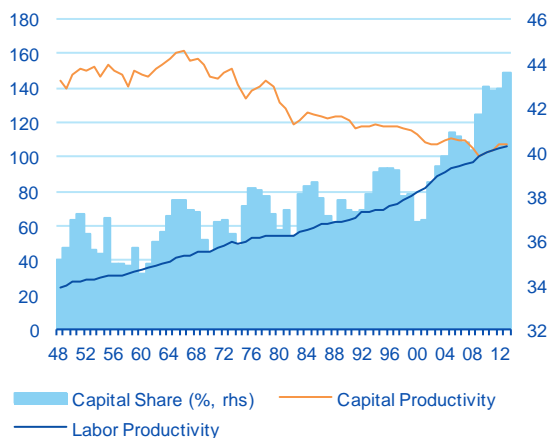
In terms of ways to combat these challenges, to date, the Fed has shouldered the burden of bringing the labor market back from the depths of the recession. While unmatched and praiseworthy, current efforts by the Fed to target the remaining rigidities in the labor market appear to be less defensible given the risks associated with continued use of unconventional accommodative monetary policy tools. Although low levels of inflation suggest that risks are contained, the structural nature of the remaining weakness may be better suited for fiscal policy, which can be more effective at targeting key weaknesses such as underinvestment in infrastructure, R&D, and education and training. In fact, in a recent speech from Janet Yellen, the Fed's Chair alluded to the fact that the Fed has not gotten a lot of help from Congress in terms of fiscal policies, saying that it would be helpful to see fiscal policy play a larger role. In other words, Yellen believes there is a case for infrastructure spending with rates so low. If there is another recession, the Fed will definitely need help from a boost in government spending, she added.

Better still, the costs associated with more expansionary fiscal policy are small given historically low nominal and real borrowing rates as well as current and expected inflation. Although the impact on labor market matching appears lower than previous estimates, a sweeping effort to reduce policy uncertainty, or put another way, to

limit the impact that polarization has on business, could provide some benefit to long-term expectations and firms' willingness to hire. Although cost-less from a financial and economic prospective, the probability of an abrupt turnaround is highly unlikely given political realities. Moreover, despite the overwhelming boost that targeted fiscal policy could have on labor markets, the likelihood of passing such reforms remains low given that both sides remain entrenched in their own political spheres. As a result, there has been a failure to move forward on issues that both sides could agree on.

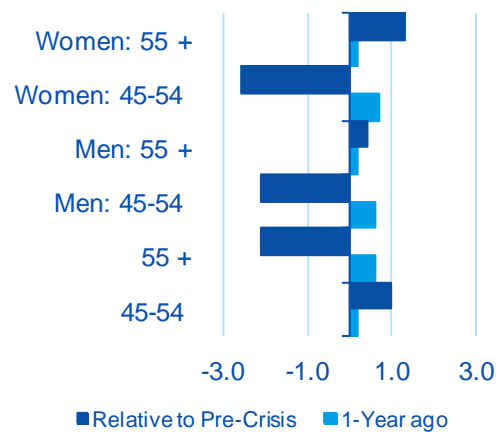
Finding solutions to the productivity paradox and managing the demographic transition are strategies that could close the remaining gaps. Attempts to boost productivity in the short-run, while essential, are more likely to impact long-run productivity, meaning that time will be the most important element of policies targeting productivity gains. It will also be a challenge to create policies that reduce the propensity of near-retirees to continue working rather than exit the labor force. Policies such as graduated retirement, delayed benefits and flexible work schedules, could slow the current trend. Indirectly, this would likely boost productivity by delaying the process at which every retiree is being substituted for younger and less experienced professionals.

Chart 14
Productivity Index and Returns to Capital and Labor*



Source: BBVA Research & Census Bureau
*Index: 2009=100

Chart 15
Aging and Labor Force Participation (change, pp)



Source: BBVA Research & Census Bureau

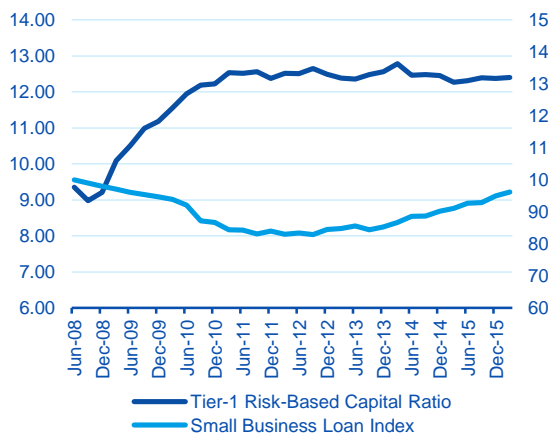
In addition, the crisis has caused a non-trivial share of high-skilled workers to transition to lower-skilled positions in the service sector. This creates many insurmountable challenges. Boosting productivity in the service sectors, which account for nearly three-fourths of all private sector employment, will be less efficient, as the manufacturing and mining sectors are, on average, 10% and 200% more productive. Not to mention, productivity gains in retail will likely be short-lived and hard to maintain for extended periods; although increased competition, intellectual property reform and reduced costs of information technology, machine learning or automation could lead to marginal gains in productivity in retail.

The unmistakable challenges associated with these initiatives suggest that combating the structural headwinds in the labor market will be most easily accomplished through regulatory action. In fact, an efficient solution could be targeted macroprudential efforts to encourage small and new business formation and hiring through increased lending—an element that was slow to recover.

Taxes and regulation remain the issues that small business owners report as the most salient problems weighing on their outlook. In addition, there is evidence that tighter macroprudential policies and greater supervisory

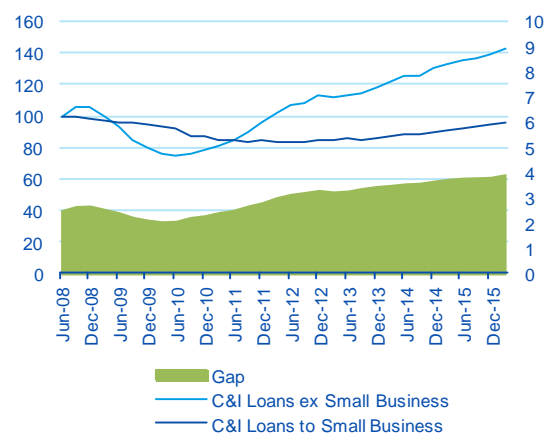
oversight can have a sufficiently negative impact on total loan growth and loan capacity for several years—approximately 20 quarters. In fact, despite accommodative monetary policy and strong liquidity allowing the supply-side to recover quickly, the demand for small business loans continues to recover more slowly. In addition, despite a greater perceived willingness of small businesses to borrow, the willingness of banks to lend to small businesses of less than \$1 million has yet to recover to pre-crisis levels, and the gap between small and large firms is also at its highest level in 20 years and growing. It appears the reluctance can also partially be explained by increased capital requirements in the post-crisis era.

Chart 16
Tier-1 Risk-Based Capital Ratio & SB Loans Index *



Source: BBVA Research & Census Bureau
*Index: 2008=100

Chart 17
Post-Crisis C&I Loans



Source: BBVA Research & Census Bureau

There is no doubt that the costs associated with excessive lending to overly risky sectors outweigh any short-run benefits. However, there is an argument to be made that small businesses and startups are not inherently more risky at the aggregate level. Rather, the market imperfections that make pricing risk more difficult and the lack of scale in processing and administering small business loan can be addressed through policies enhancing banks' willingness to lend to this segment. In turn, policies that help banks overcome these obstacles through macroprudential means could be unparalleled tools to both stimulate small business growth and heal the breakdowns in the broader labor market.

Bottom Line

After May's employment report and the Fed's decision to delay rate increases indefinitely, there is a real question as to whether the recovery is losing momentum as it enters its 28th consecutive quarter of expansion. There has been notable improvement in a handful of labor market indicators, and in terms of the Beveridge Curve, there have been signs that things are improving. However, based on a time-series derivation of the Beveridge Curve gap, known as the "curve shifter," there is a remaining gap, explained by structural, rather than cyclical, forces. In fact, we identified three key factors that explain the significant and persistent outward shift in the BC: labor force outflows of those 55 and older, cyclical fiscal policy tightening and credit availability. At the firm size, class and industry level we found heterogeneous outcomes with respect to labor market matching efficiency. Specifically, fluctuations in hiring for new entrants or small firms impart a larger influence on the broader labor market, particularly in foundational sectors such as retail, real estate and construction. As a result, macroprudential policies that encourage banks to empower small businesses and startups have the greatest potential to kick start what is often referred to as the engine of growth—entrepreneurialism.

References

- Acemoglu, Daron and Williams B. Hawkins. 2014. "Search with multi-worker firms", Theoretical Economics
- Albrecht, James and Susan Vroman. 1999. "A Matching Model with Endogenous Skill Requirements", Unpublished.
- Baker, Scott R., Nicholas Bloom and Steven J. Davis. 2015. "Measuring Economic Policy Uncertainty", National Bureau of Economic Research.
- Baker, Scott R. and Andrey Fradkin. 2015. "The Impact of Unemployment Insurance on Job Search: Evidence from Google Search Data", Unpublished.
- Barnichon, Regis, Michael Elsby, Bart Hobijn and Aysegül Sahin. 2012. "Which industries are shifting the Beveridge curve?" Unpublished.
- Diamond, Peter. 2013. "Cyclical Unemployment, Structural Unemployment", Federal Reserve Bank of Boston.
- Bova, Elva, Joao Tovar Jalles and Christina Kolerus. 2016. "Shifting the Beveridge Curve: What Affects Labor Market Matching?", IMF Working Paper.
- Davis, Steven J. 2001. "The Quality Distribution of Jobs and the Structure of Wages in Search Equilibrium", National Bureau of Economic Research.
- Davis, Steven J. and John Haltiwanger. 2014. "Labor Market Fluidity and Economic Performance", Federal Reserve Bank of Kansas City.
- Davis, Steven J., Jason Faberman and John C. Haltiwanger. 2012. "The Establishment-Level Behavior of Vacancies and Hiring", Federal Reserve Board of Governors.
- Hobijn, Bart. 2012. "The Industry-Occupation Mix of U.S. Job Openings and Hires", Federal Reserve Bank of San Francisco
- Krueger, Alan B. and Andreas Mueller. "Job Search and Unemployment Insurance: New Evidence from Time Use Data", CEPS Working Papers (August 2008)
- Leduc, Sylvain and Zheng Liu. 2015. "Uncertainty Shocks are Aggregate Demand Shocks", Federal Reserve Bank of San Francisco.
- Lubik, Thomas A. 2013. "The Shifting and Twisting Beveridge Curve: An Aggregate Perspective", Federal Reserve Bank of Richmond.
- Mills, Karen Gordon and Brayden McCarthy. 2014. "The State of Small Business Lending: Credit Access during the Recovery and How Technology May Change the Game", Harvard Business School.
- Mortensen, Dale T. and Christopher A. Pissarides. 1999. "New Developments In Models Of Search In The Labor Market", Handbook of Labor Economics.
- Porter, Michael, Rosabeth Moss Kanter and Jan Rivkin. 2013. "Competitiveness at a Crossroads: Findings of the Harvard Business School's 2012 Survey on U.S. Competitiveness", Harvard Business School.
- Stock, James H. and Mark W. Watson. 2012. "Disentangling the Channels of the 2007-2009 Recession", Brookings Papers on Economic Activity.

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