Peter B McCrory (1-212) 622-5252 peter.mccrory@jpmchase.com Daniel Silver (1-212) 622-6039 daniel.a.silver@jpmorgan.com

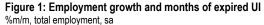
Correction (first published 25 August 2021) (See disclosures for details)

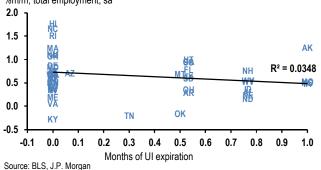
Economic Research Note

US: No effects of UI expiration in July labor market data

- State ends to UI programs allow us to gauge impact on economy
- Labor market data and other indicators show no clear effect so far
- Negative demand shock from net loss of income after benefit end may offset individual labor supply effects
- Aggregate effects may become more evident over time

Nearly half of US states have now ended expanded unemployment insurance benefits ahead of the federal end to the programs set for early September. We are closely monitoring activity in the states with early expirations to see how ending these programs impacts the economy, particularly given concerns about labor shortages and the possibility that expanded unemployment insurance has kept unemployed workers on the sidelines. Our earlier research failed to find large effects of ending the programs in jobless claims filings and alt-data indicators such as OpenTable dining and Google searches for "jobs" as a measure of job search effort. In this note we document that July employment growth does not seem to have been impacted by the changes to the unemployment insurance programs. There is essentially zero correlation between statelevel employment growth in July and the time between the end of expanded UI benefits and the survey reference week (Figures 1 and 2). We similarly find no differences in earnings growth or labor force participation among those states that had ended benefits early (Figures 3 and 4). We will continue to closely monitor the state-level data as it may simply take some time for an effect to materialize in the aggregate data.

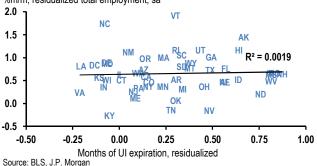




These recently released BLS state-level labor market data provide an important lens through which to examine the effects of the end of the UI programs since the other indicators we have analyzed to date provide an incomplete picture of labor market activity. For example, the lack of an effect on initial and continuing claims growth in regular state programs may simply obscure the employment effects of workers losing benefits through PUA and PEUC. Claims in these pandemic-related programs decline mechanically upon expiration of benefits and give no indication of employment outcomes after loss of benefits.

This matters since recent evidence from the academic literature suggests that job-finding rates did increase among some low-income, credit-constrained households after the loss of benefits. By contrast, the majority of such workers do not quickly find employment, which entails for them a net decline in income upon the expiration of expanded benefits. The negative demand shock arising from this loss of income could itself lead to job losses, potentially offsetting any gain in aggregate labor supply. Thus, the positive employment gains estimated from worker-level data may tend to overstate the aggregate employment effects.

Figure 2: Employment growth and months of expired UI, residualized %m/m, residualized total employment, sa



One approach to jointly estimating the combined direct and indirect effects of ending UI benefits early is to directly analyze state-level employment data. To do so, we estimate the following state-level regression of July employment growth on the amount of time that had elapsed between the expiration of expanded UI benefits and July 12, the date determining the survey reference week¹:

$$\Delta \ln(Emp_s) = \beta \times Months \ since \ ending \ UI + controls + \varepsilon_s$$

We include as controls in this regression a six-month moving average of lagged employment growth (to control for statespecific trends) and the percentage decline in employment in

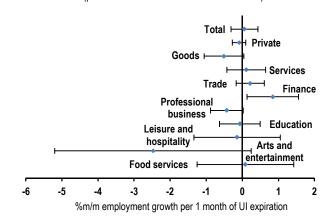
¹ For example, all states that ended benefits on June 12 (Alaska, Iowa, Mississippi, and Missouri) have a value of 1 for "months since ending UI."

Peter B McCrory (1-212) 622-5252 peter.mccrory@jpmchase.com Daniel Silver (1-212) 622-6039 daniel.a.silver@jpmorgan.com **Economic Research**

US: No effects of UI expiration in July labor market data August 26, 2021



Figure 5: Estimated effect of UI expiration on employment growth Selected industries (point estimates and 95% confidence intervals)

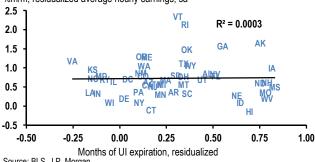


Source: BLS, J.P. Morgan

April 2020 (to control for severity of the pandemic downturn). Our estimate of β is close to zero and statistically insignificant, implying that state-level employment growth in July was uncorrelated with how much of the previous month expanded UI benefits had been expired. Figure 2 plots the variation between employment growth and months since UI benefits had expired after statistically removing the contribution of the two control variables.

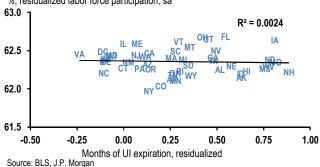
We similarly see no relationship between average hourly earnings and months since a state ended UI benefits (Figure 3). Labor force participation is likewise uncorrelated (Figure 4). Finally, we re-estimate the state-level employment growth regression for selected industries. There is no clear association between sectoral employment growth through July and UI benefits expiration (Figure 5).²

Figure 3: Earnings growth and months of expired UI, residualized %m/m, residualized average hourly earnings, sa



Source: BLS, J.P. Morgan

Figure 4: Participation and months of expired UI, residualized %, residualized labor force participation, sa



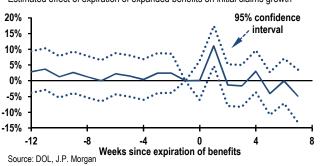
As a final observation, we study the effects of ending UI benefits on continuing claims growth using the same methodology from our previous note documenting little to no evidence of an effect through early July. Specifically, we plot the normalized coefficients from the following regression from a panel of states (s) and weeks (t):

$$\Delta ln(Claims)_{s,t} = \sum_{k=\underline{C}}^{\bar{C}} \beta_k \times \{k \ periods \ since \ "treatment"\}$$

$$+ \alpha_s + \gamma_t + \varepsilon_{s,t}$$

Even seven weeks following the expiration of benefits, there is no systematic effect on the pace at which continuing claims in regular state programs have declined (Figure 2). There is a spike in continuing claims growth following expiration of benefits—presumably from processing complications associated with ending pandemic-era benefits early—which is then followed by six weeks of growth rates statistically indistinguishable from zero. We find a similar lack of an effect in terms of initial claims growth.

Figure 6: Effect of UI cancellation on continuing claims growth Estimated effect of expiration of expanded benefits on initial claims growth



² The regressions underlying Figures 3 through 5 change the left-hand side variable to be the monthly percent change in average hourly earnings, the level of the labor force participation rate, and sector-specific employment growth. For the earnings regression we additionally control for the lagged six-month moving average in earnings growth. For the participation regression we control for the one-month lag of the level of the participation rate. The sector-specific regressions include a lag of the six-month moving average of sector-specific employment growth.

Peter B McCrory (1-212) 622-5252 peter.mccrory@jpmchase.com Daniel Silver (1-212) 622-6039 daniel.a.silver@jpmorgan.com Economic Research Global Data Watch August 26, 2021

J.P.Morgan

Correction: Corrected Figure 3 subhead

Analysts' Compensation: The research analysts responsible for the preparation of this report receive compensation based upon various factors, including the quality and accuracy of research, client feedback, competitive factors, and overall firm revenues.

Other Disclosures

J.P. Morgan is a marketing name for investment banking businesses of JPMorgan Chase & Co. and its subsidiaries and affiliates worldwide.

Any long form nomenclature for references to China; Hong Kong; Taiwan; and Macau within this research material are Mainland China; Hong Kong SAR (China); Taiwan (China); and Macau SAR (China).

JPMorgan research may, from time to time, write on issuers or securities targeted by economic or financial sanctions imposed or administered by the governmental authorities of the U.S., EU, UK or other relevant jurisdictions (Sanctioned Securities). Nothing in this report is intended to be read or construed as encouraging, facilitating, promoting or otherwise approving investment or dealing in such Sanctioned Securities. Clients should be aware of their own legal and compliance obligations when making investment decisions.

Changes to Interbank Offered Rates (IBORs) and other benchmark rates: Certain interest rate benchmarks are, or may in the future become, subject to ongoing international, national and other regulatory guidance, reform and proposals for reform. For more information, please consult: https://www.jpmorgan.com/global/disclosures/interbank offered rates

Private Bank Clients: Where you are receiving research as a client of the private banking businesses offered by JPMorgan Chase & Co. and its subsidiaries ("J.P. Morgan Private Bank"), research is provided to you by J.P. Morgan Private Bank and not by any other division of J.P. Morgan, including, but not limited to, the J.P. Morgan Corporate and Investment Bank and its Global Research division.

Legal entity responsible for the production and distribution of research: The legal entity identified below the name of the Reg AC Research Analyst who authored this material is the legal entity responsible for the production of this research. Where multiple Reg AC Research Analysts authored this material with different legal entities identified below their names, these legal entities are jointly responsible for the production of this research. Research Analysts from various J.P. Morgan affiliates may have contributed to the production of this material but may not be licensed to carry out regulated activities in your jurisdiction (and do not hold themselves out as being able to do so). Unless otherwise stated below, this material has been distributed by the legal entity responsible for production. If you have any queries, please contact the relevant Research Analyst in your jurisdiction or the entity in your jurisdiction that has distributed this research material.

Legal Entities Disclosures and Country-/Region-Specific Disclosures:

Argentina: JPMorgan Chase Bank N.A Sucursal Buenos Aires is regulated by Banco Central de la República Argentina ("BCRA"- Central Bank of Argentina) and Comisión Nacional de Valores ("CNV"- Argentinian Securities Commission" - ALYC y AN Integral N°51). Australia: J.P. Morgan Securities Australia Limited ("JPMSAL") (ABN 61 003 245 234/AFS Licence No: 238066) is regulated by the Australian Securities and Investments Commission and is a Market, Clearing and Settlement Participant of ASX Limited and CHI-X. This material is issued and distributed in Australia by or on behalf of JPMSAL only to "wholesale clients" (as defined in section 761G of the Corporations Act 2001). A list of all financial products covered can be found by visiting https://www.jpmm.com/research/disclosures. J.P. Morgan seeks to cover companies of relevance to the domestic and international investor base across all Global Industry Classification Standard (GICS) sectors, as well as across a range of market capitalisation sizes. If applicable, in the course of conducting public side due diligence on the subject company(ies), the Research Analyst team may at times perform such diligence through corporate engagements such as site visits, discussions with company representatives, management presentations, etc. Research issued by JPMSAL has been prepared in accordance with J.P. Morgan Australia's Research Independence Policy which can be found at the following link: J.P. Morgan Australia - Research Independence Policy. Brazil: Banco J.P. Morgan S.A. is regulated by the Comissao de Valores Mobiliarios (CVM) and by the Central Bank of Brazil. Ombudsman J.P. Morgan: 0800-7700847 / ouvidoria.jp.morgan@jpmorgan.com. Canada: J.P. Morgan Securities Canada Inc. is a registered investment dealer, regulated by the Investment Industry Regulatory Organization of Canada and the Ontario Securities Commission and is the participating member on Canadian exchanges. This material is distributed in Canada by or on behalf of J.P.Morgan Securities Canada Inc. Chile: Inversiones J.P. Morgan Limitada is an unregulated entity incorporated in Chile. China: J.P. Morgan Securities (China) Company Limited has been approved by CSRC to conduct the securities investment consultancy business. Dubai International Financial Centre (DIFC): JPMorgan Chase Bank, N.A., Dubai Branch is regulated by the Dubai Financial Services Authority (DFSA) and its registered address is Dubai International Financial Centre - The Gate, West Wing, Level 3 and 9 PO Box 506551, Dubai, UAE. This material has been distributed by JP Morgan Chase Bank, N.A., Dubai Branch to persons regarded as professional clients or market counterparties as defined under the DFSA rules. European Economic Area (EEA): Unless specified to the contrary, research is distributed in the EEA by J.P. Morgan AG ("JPM AG"), which is a member of the Frankfurt Stock Exchange, is authorised by the European Central Bank ("ECB") and is regulated by the Federal Financial Supervisory Authority (BaFin). JPM AG is a company incorporated in the Federal Republic of Germany with a registered office at Taunustor 1, 60310 Frankfurt am Main, the Federal Republic of Germany. The material has been distributed in the EEA to persons regarded as professional investors (or equivalent) pursuant to Art. 4 para. 1 no. 10 and Annex II of MiFID II and its respective implementation in their home jurisdictions ("EEA professional investors"). This material must not be acted on or relied on by persons who are not EEA professional investors. Any investment or investment activity to which this material relates is only available to EEA relevant persons and will be engaged in only with EEA relevant persons. Hong Kong: J.P. Morgan Securities (Asia Pacific) Limited (CE number AAJ321) is regulated by the Hong Kong Monetary Authority and the Securities and Futures Commission in Hong Kong, and J.P. Morgan Broking (Hong Kong) Limited (CE number AAB027) is regulated by

Peter B McCrory (1-212) 622-5252 peter.mccrory@jpmchase.com Daniel Silver (1-212) 622-6039 daniel.a.silver@jpmorgan.com

Economic Research

US: No effects of UI expiration in July labor market data August 26, 2021 J.P.Morgan

the Securities and Futures Commission in Hong Kong. JP Morgan Chase Bank, N.A., Hong Kong (CE Number AAL996) is regulated by the Hong Kong Monetary Authority and the Securities and Futures Commission, is organized under the laws of the United States with limited liability. India: J.P. Morgan India Private Limited (Corporate Identity Number - U67120MH1992FTC068724), having its registered office at J.P. Morgan Tower, Off. C.S.T. Road, Kalina, Santacruz - East, Mumbai - 400098, is registered with the Securities and Exchange Board of India (SEBI) as a 'Research Analyst' having registration number INH000001873. J.P. Morgan India Private Limited is also registered with SEBI as a member of the National Stock Exchange of India Limited and the Bombay Stock Exchange Limited (SEBI Registration Number -INZ000239730) and as a Merchant Banker (SEBI Registration Number - MB/INM000002970). Telephone: 91-22-6157 3000, Facsimile: 91-22-6157 3990 and Website: www.jpmipl.com. JPMorgan Chase Bank, N.A. - Mumbai Branch is licensed by the Reserve Bank of India (RBI) (Licence No. 53/ Licence No. BY.4/94; SEBI - IN/CUS/014/ CDSL : IN-DP-CDSL-444-2008/ IN-DP-NSDL-285-2008/ INBI00000984/ INE231311239) as a Scheduled Commercial Bank in India, which is its primary license allowing it to carry on Banking business in India and other activities, which a Bank branch in India are permitted to undertake. For non-local research material, this material is not distributed in India by J.P. Morgan India Private Limited. Indonesia: PT J.P. Morgan Sekuritas Indonesia is a member of the Indonesia Stock Exchange and is regulated by the OJK a.k.a. BAPEPAM LK. Korea: J.P. Morgan Securities (Far East) Limited, Seoul Branch, is a member of the Korea Exchange (KRX). JPMorgan Chase Bank, N.A., Seoul Branch, is licensed as a branch office of foreign bank (JPMorgan Chase Bank, N.A.) in Korea. Both entities are regulated by the Financial Services Commission (FSC) and the Financial Supervisory Service (FSS). For non-macro research material, the material is distributed in Korea by or through J.P. Morgan Securities (Far East) Limited, Seoul Branch. Japan: JPMorgan Securities Japan Co., Ltd. and JPMorgan Chase Bank, N.A., Tokyo Branch are regulated by the Financial Services Agency in Japan. Malaysia: This material is issued and distributed in Malaysia by JPMorgan Securities (Malaysia) Sdn Bhd (18146-X), which is a Participating Organization of Bursa Malaysia Berhad and holds a Capital Markets Services License issued by the Securities Commission in Malaysia. Mexico: J.P. Morgan Casa de Bolsa, S.A. de C.V. and J.P. Morgan Grupo Financiero are members of the Mexican Stock Exchange and are authorized to act as a broker dealer by the National Banking and Securities Exchange Commission. New Zealand: This material is issued and distributed by JPMSAL in New Zealand only to "wholesale clients" (as defined in the Financial Advisers Act 2008). JPMSAL is registered as a Financial Service Provider under the Financial Service providers (Registration and Dispute Resolution) Act of 2008. Pakistan: J. P. Morgan Pakistan Broking (Pvt.) Ltd is a member of the Karachi Stock Exchange and regulated by the Securities and Exchange Commission of Pakistan. Philippines: J.P. Morgan Securities Philippines Inc. is a Trading Participant of the Philippine Stock Exchange and a member of the Securities Clearing Corporation of the Philippines and the Securities Investor Protection Fund. It is regulated by the Securities and Exchange Commission. Russia: CB J.P. Morgan Bank International LLC is regulated by the Central Bank of Russia. Singapore: This material is issued and distributed in Singapore by or through J.P. Morgan Securities Singapore Private Limited (JPMSS) [MCI (P) 018/04/2020 and Co. Reg. No.: 199405335R], which is a member of the Singapore Exchange Securities Trading Limited, and/or JPMorgan Chase Bank, N.A., Singapore branch (JPMCB Singapore) [MCI (P) 052/09/2020], both of which are regulated by the Monetary Authority of Singapore. This material is issued and distributed in Singapore only to accredited investors, expert investors and institutional investors, as defined in Section 4A of the Securities and Futures Act, Cap. 289 (SFA). This material is not intended to be issued or distributed to any retail investors or any other investors that do not fall into the classes of "accredited investors," "expert investors" or "institutional investors," as defined under Section 4A of the SFA. Recipients of this material in Singapore are to contact JPMSS or JPMCB Singapore in respect of any matters arising from, or in connection with, the material. As at the date of this material, JPMSS is a designated market maker for certain structured warrants listed on the Singapore Exchange where the underlying securities may be the securities discussed in this material. Arising from its role as a designated market maker for such structured warrants, JPMSS may conduct hedging activities in respect of such underlying securities and hold or have an interest in such underlying securities as a result. The updated list of structured warrants for which JPMSS acts as designated market maker may be found on the website of the Singapore Exchange Limited: http://www.sgx.com. South Africa: J.P. Morgan Equities South Africa Proprietary Limited and JPMorgan Chase Bank, N.A., Johannesburg Branch are members of the Johannesburg Securities Exchange and are regulated by the Financial Services Board. Taiwan: J.P. Morgan Securities (Taiwan) Limited is a participant of the Taiwan Stock Exchange (company-type) and regulated by the Taiwan Securities and Futures Bureau. Material relating to equity securities is issued and distributed in Taiwan by J.P. Morgan Securities (Taiwan) Limited, subject to the license scope and the applicable laws and the regulations in Taiwan. According to Paragraph 2, Article 7-1 of Operational Regulations Governing Securities Firms Recommending Trades in Securities to Customers (as amended or supplemented) and/or other applicable laws or regulations, please note that the recipient of this material is not permitted to engage in any activities in connection with the material that may give rise to conflicts of interests, unless otherwise disclosed in the "Important Disclosures" in this material. Thailand: This material is issued and distributed in Thailand by JPMorgan Securities (Thailand) Ltd., which is a member of the Stock Exchange of Thailand and is regulated by the Ministry of Finance and the Securities and Exchange Commission, and its registered address is 3rd Floor, 20 North Sathorn Road, Silom, Bangrak, Bangkok 10500. UK: Unless specified to the contrary, research is distributed in the UK by J.P. Morgan Securities plc ("JPMS plc") which is a member of the London Stock Exchange and is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. JPMS plc is registered in England & Wales No. 2711006, Registered Office 25 Bank Street, London, E14 5JP. This material is directed in the UK only to: (a) persons having professional experience in matters relating to investments falling within article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) (Order) 2005 ("the FPO"); (b) persons outlined in article 49 of the FPO (high net worth companies, unincorporated associations or partnerships, the trustees of high value trusts, etc.); or (c) any persons to whom this communication may otherwise lawfully be made; all such persons being referred to as "UK relevant persons". This material must not be acted on or relied on by persons who are not UK relevant persons. Any investment or investment activity to which this material relates is only available to UK relevant persons and will be engaged in only with UK relevant persons. Research issued by JPMS plc has been prepared in accordance with JPMS plc's policy for prevention and avoidance of conflicts of interest related to the production of Research which can be found at the following link: J.P. Morgan EMEA - Research Independence Policy, U.S.: J.P. Morgan Securities LLC ("JPMS") is a member of the NYSE, FINRA, SIPC, and the NFA. JPMorgan Chase Bank, N.A. is a member of the FDIC. Material published by non-U.S. affiliates is distributed in the U.S. by JPMS who accepts responsibility for its content.

Peter B McCrory (1-212) 622-5252 peter.mccrory@jpmchase.com Daniel Silver (1-212) 622-6039 daniel.a.silver@jpmorgan.com Economic Research Global Data Watch August 26, 2021

J.P.Morgan

General: Additional information is available upon request. The information in this material has been obtained from sources believed to be reliable. While all reasonable care has been taken to ensure that the facts stated in this material are accurate and that the forecasts, opinions and expectations contained herein are fair and reasonable, JPMorgan Chase & Co. or its affiliates and/or subsidiaries (collectively J.P. Morgan) make no representations or warranties whatsoever to the completeness or accuracy of the material provided, except with respect to any disclosures relative to J.P. Morgan and the Research Analyst's involvement with the issuer that is the subject of the material. Accordingly, no reliance should be placed on the accuracy, fairness or completeness of the information contained in this material. Any data discrepancies in this material could be the result of different calculations and/or adjustments. J.P. Morgan accepts no liability whatsoever for any loss arising from any use of this material or its contents, and neither J.P. Morgan nor any of its respective directors, officers or employees, shall be in any way responsible for the contents hereof, apart from the liabilities and responsibilities that may be imposed on them by the relevant regulatory authority in the jurisdiction in question, or the regulatory regime thereunder. Opinions, forecasts or projections contained in this material represent J.P. Morgan's current opinions or judgment as of the date of the material only and are therefore subject to change without notice. Periodic updates may be provided on companies/industries based on company-specific developments or announcements, market conditions or any other publicly available information. There can be no assurance that future results or events will be consistent with any such opinions, forecasts or projections, which represent only one possible outcome. Furthermore, such opinions, forecasts or projections are subject to certain risks, uncertainties and assumptions that have not been verified, and future actual results or events could differ materially. The value of, or income from, any investments referred to in this material may fluctuate and/or be affected by changes in exchange rates. All pricing is indicative as of the close of market for the securities discussed, unless otherwise stated. Past performance is not indicative of future results. Accordingly, investors may receive back less than originally invested. This material is not intended as an offer or solicitation for the purchase or sale of any financial instrument. The opinions and recommendations herein do not take into account individual client circumstances, objectives, or needs and are not intended as recommendations of particular securities, financial instruments or strategies to particular clients. The recipients of this material must make their own independent decisions regarding any securities or financial instruments mentioned herein and should seek advice from such independent financial, legal, tax or other adviser as they deem necessary. J.P. Morgan may trade as a principal on the basis of the Research Analysts' views and research, and it may also engage in transactions for its own account or for its clients' accounts in a manner inconsistent with the views taken in this material, and J.P. Morgan is under no obligation to ensure that such other communication is brought to the attention of any recipient of this material. Others within J.P. Morgan, including Strategists, Sales staff and other Research Analysts, may take views that are inconsistent with those taken in this material. Employees of J.P. Morgan not involved in the preparation of this material may have investments in the securities (or derivatives of such securities) mentioned in this material and may trade them in ways different from those discussed in this material. This material is not an advertisement for or marketing of any issuer, its products or services, or its securities in any jurisdiction.

"Other Disclosures" last revised July 17, 2021.

Copyright 2021 JPMorgan Chase & Co. All rights reserved. This material or any portion hereof may not be reprinted, sold or redistributed without the written consent of J.P. Morgan.