Michael Feroli (1-212) 834-5523 michael.e.feroli@jpmorgan.com Daniel Silver (1-212) 622-6039 daniel.a.silver@jpmorgan.com

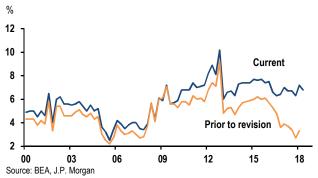
Economic Research Note

Meet the new, frugal US consumer

- Upward revisions to income estimates lead to a much higher than previously thought personal saving rate
- This shouldn't come as a huge surprise—the saving rate has tended to get revised higher in the past
- While it makes us feel better about consumption, there's no strong evidence the saving rate predicts spending
- After the saving rate revision the wealth effect now looks non-existent during this expansion

In the recent comprehensive revision to the national accounts data the personal saving rate in 1Q18 was revised to 7.2% from a previously-reported 3.3% (Figure 1). This huge upward revision was mostly due to a higher estimated path for personal income. Much of this new-found income was in the form of higher estimated income from assets (such as dividends and interest income) or from higher proprietors' income. While this upward revision was large, it shouldn't be too surprising. The saving rate has a tendency to be revised higher and usually for the same reason—an upward revision to personal income estimates.

Figure 1: Personal saving rate



The higher saving rate makes us feel qualitatively better about the outlook for consumer spending, as it would mean consumers no longer look as stretched as they did before the revision. That said, the quantitative evidence that the saving rate predicts future consumption growth is mixed. As such, we didn't revise our outlook for consumer spending after the saving rate revision. Finally, before the revision standard wealth effect models would have predicted a lower saving rate than the one that actually was reported. After the revision this puzzle looks even greater. Put another way, after the revision it now looks like consumer behavior shifted materially after the Great Recession, and households appear to be much more

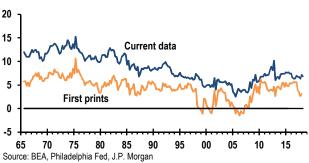
cautious about increasing spending in response to rising wealth.

Look what's between the couch cushions

The recent upward revisions to the personal saving rate (Figure 1) have fit the historical pattern of the saving rate being revised higher over time. Using the Philadelphia Fed's real-time data set, we see that the saving rate for each quarter since 1965 currently stands at a higher level than the figure initially reported (Figure 2).

Figure 2: Personal saving rate

% of DPI, sa



The historical upward revisions to the saving rate have generally corresponded with upward revisions to income, and the recent annual revision was no different. The 1Q18 level of personal saving more than doubled in the BEA's recent benchmark revision, jumping from \$481bn to \$1094bn saar. Over three-fourths of this revision came from upward revisions to the income data, while downward revisions to spending and taxes accounted for the remaining 24% (Table 1).

Table 1: Personal income and spending, 1Q18

\$bn, saar	Prior level	Updated level	Difference
Personal income	16850.7	17318.9	468.2
Employee compensation	10608.7	10709.6	100.9
Proprietors' income	1420.6	1549.9	129.3
Receipts on assets	2504.3	2719.5	215.2
Interest income	1523.9	1597.6	73.7
Dividend income	980.5	1121.9	141.4
All other	2317	2339.8	22.8
Personal current taxes	2077.6	2029.9	-47.7
Personal outlays	14292.4	14194.8	-97.6
Personal saving	480.6	1094.1	613.5

Source: BEA, J.P. Morgan

The upward revision to personal income was spread across many of the related subcategories, with an upward revision to receipts on assets (mainly dividend income) leading the way (Table 1). The revisions to the income data are based on the BEA's incorporation of more reliable source data that become available after earlier estimates have been released. Of partic-



ular note, the BEA indicated that recent upward revisions to dividend income were based on IRS Statistics of Income data and that upward revisions to the proprietors' income primarily reflected revisions to estimates of underreported income that were based on the IRS's tax gap data.

Great. So what does it mean?

It would make sense that a higher saving rate means a more upbeat outlook for consumer spending, as households aren't stretching as much to make ends meet. After all, the saving rate—measured either in first print or current data—reached historic lows in 2005-7, and we all know what happened after. Now it would appear we are in the opposite situation. Indeed, when we regress four-quarter real consumer spending growth on the saving rate lagged four quarters we find that a higher saving rate does portend faster consumer spending growth (and the results are significant using either first-print or current vintage data). However, this result is driven entirely by the Great Recession episode. When we drop that observation the saving rate loses all economic and statistical significance in projecting future consumption growth (again, with either first-print or current vintage data). Where does this leave us? We haven't revised our consumption forecast in light of the savings rate revision, but it does gives us comfort that consumers are nowhere near to being as overstretched as they were in the years heading into the Great Recession.

This message is similar to one that comes from looking at the composition of saving that prevailed in the data even prior to the revision. Saving can be defined as the difference between income and consumption—this is the definition in the national accounts data we have been discussing in this note—or as the difference between the acquisition of financial assets and the increase in liabilities (Figure 3).

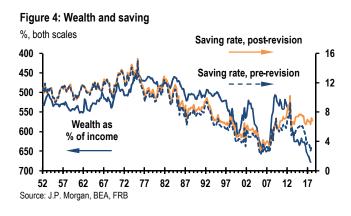
Figure 3: Constituents of savings

% of disposable personal income 25 Net acquisition of financial assets A 20 15 10 5 Net increase in liabilities -5 60 65 70 75 80 85 90 95 00 05 10 15 Source: J.P. Morgan

This latter measure is in the separately reported financial accounts data (and won't be directly affected by the national accounts revision). In that data the pre-recession years didn't feature exceptionally low asset acquisition, but rather exceptionally high liability accumulation. Just as we are comforted by the higher reported saving rate, we are also encouraged that leverage hasn't ramped up again.

Wealth effect RIP

The tendency of households to spend some fraction of an increase in net worth is known as the wealth effect. In the years prior to the great recession this was thought to be one of the more reliable regularities in macroeconomics: when household wealth increased by a dollar, consumer spending would increase by 3 to 4 cents and the saving rate would go down commensurately. When one overlaid the saving rate against the wealth-to-income ratio (Figure 4), there was a reasonably solid correlation. Beginning in 2014 we started noticing that the post-recession wealth effect was losing its power to explain saving behavior (see the link <u>here</u>). In spite of a roaring stock market, the saving rate barely budged in the early years of the recovery.



With the latest revision, the wealth effect looks even weaker. Had pre-recession wealth effects played out in the current expansion, the saving rate would be predicted to be 2.0%; the upward revision places the data even further away from that prediction. When we run those same models since the end of the recession they indicate that the wealth effect has disappeared completely. There are a number of explanations why the wealth effect has become attenuated in the current expansion, and our previously-referenced research discusses some of them. That debate hasn't been entirely settled, but there was probably some scarring effect of the Great Recession that altered behavior. That behavior may have led to a pokier pace of growth in this expansion—had the saving rate actually fallen to 2.0% the average pace of real consumption growth in this expansion would have been about 0.5%-pt per annum faster on average—but has probably also left the household sector more resilient to macroeconomic bumps in the road.

JPMorgan Chase Bank NA Michael Feroli (1-212) 834-5523 michael.e.feroli@jpmorgan.com Daniel Silver (1-212) 622-6039

daniel.a.silver@jpmorgan.com

Economic Research Global Data Watch August 9, 2018 J.P.Morgan

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 ("JPM") is the global brand name for J.P. Morgan Securities LLC ("JPMS") and its affiliates worldwide. J.P. Morgan Cazenove is a marketing name for the U.K. investment banking businesses and EMEA cash equities and equity research businesses of JPMorgan Chase & Co. and its subsidiaries.

Principal Trading: J.P. Morgan and/or its affiliates normally make a market and trade as principal in fixed income securities discussed in this report.

Private Bank Clients: Where you are a client of the private banking businesses offered by JPMorgan Chase & Co. and its subsidiaries ("J.P. Morgan Private Bank"), research is issued 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 research division.

Legal Entities Disclosures

U.S.: JPMS is a member of NYSE, FINRA, SIPC and the NFA. JPMorgan Chase Bank, N.A. is a member of FDIC. U.K.: JPMorgan Chase N.A., London Branch, is authorised by the Prudential Regulation Authority and is subject to regulation by the Financial Conduct Authority and to limited regulation by the Prudential Regulation Authority. Details about the extent of our regulation by the Prudential Regulation Authority are available from J.P. Morgan on request, J.P. Morgan Securities plc (JPMS plc) 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. Registered in England & Wales No. 2711006. Registered Office 25 Bank Street, London, E14 5JP. South Africa: J.P. Morgan Equities South Africa Proprietary Limited is a member of the Johannesburg Securities Exchange and is regulated by the Financial Services Board. 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/or J.P. Morgan Broking (Hong Kong) Limited (CE number AAB027) is regulated by the Securities and Futures Commission in Hong Kong. Korea: This material is issued and distributed in Korea by or through J.P. Morgan Securities (Far East) Limited, Seoul Branch, which is a member of the Korea Exchange(KRX) and is regulated by the Financial Services Commission (FSC) and the Financial Supervisory Service (FSS). Australia: J.P. Morgan Australia Limited (JPMAL) (ABN 52 002 888 011/AFS Licence No. 238188) is regulated by ASIC and J.P. Morgan Securities Australia Limited (JPMSAL) (ABN 61 003 245 234/AFS Licence No: 238066) is regulated by ASIC and is a Market, Clearing and Settlement Participant of ASX Limited and CHI-X. 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. 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 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 (SEBI Registration Number - INB 230675231/INF 230675231/INE 230675231), the Bombay Stock Exchange Limited (SEBI Registration Number - INB 010675237/INF 010675237) 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. For non local research reports, this material is not distributed in India by J.P. Morgan India Private Limited. 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. Indonesia: PT J.P. Morgan Securities Indonesia is a member of the Indonesia Stock Exchange and is regulated by the OJK a.k.a. BAPEPAM LK. 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. Brazil: Banco J.P. Morgan S.A. is regulated by the Comissao de Valores Mobiliarios (CVM) and by the Central Bank of Brazil. Mexico: J.P. Morgan Casa de Bolsa, S.A. de C.V., J.P. Morgan Grupo Financiero is a member of the Mexican Stock Exchange and authorized to act as a broker dealer by the National Banking and Securities Exchange Commission. Singapore: This material is issued and distributed in Singapore by or through J.P. Morgan Securities Singapore Private Limited (JPMSS) [MCI (P) 099/04/2018 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) 059/09/2017], 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 document are to contact JPMSS or JPMCB Singapore in respect of any matters arising from, or in connection with, the document. 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 a holder of Capital Markets Services License issued by the Securities Commission in Malaysia. 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. Saudi Arabia: J.P. Morgan Saudi Arabia Ltd. is authorized by the Capital Market Authority of the Kingdom of Saudi Arabia (CMA) to carry out dealing as an agent, arranging, advising and custody, with respect to securities business under licence number 35-07079 and its registered address is at 8th Floor, Al-Faisaliyah Tower, King Fahad Road, P.O. Box 51907, Riyadh 11553, Kingdom of Saudi Arabia. Dubai: 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 - Building 3, Level 7, PO Box 506551, Dubai, UAE.

Country and Region Specific Disclosures

U.K. and European Economic Area (EEA): Unless specified to the contrary, issued and approved for distribution in the U.K. and the EEA by JPMS plc. Investment research issued by JPMS plc has been prepared in accordance with JPMS plc's policies for managing conflicts of interest arising as a result of publication and distribution of investment research. Many European regulators require a firm to establish, implement and maintain such a policy. Further information about J.P. Morgan's conflict of interest policy and a description of the effective internal organisations and administrative arrangements set up for the prevention and avoidance of conflicts of interest is set out at the following link https://www.jpmorgan.com/jpmpdf/1320742677360.pdf. This report has been issued in the U.K. only to persons of a kind described in Article 19 (5), 38, 47 and 49 of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (all such persons being referred to as "relevant persons"). This document must not be acted on or relied on by persons who are not relevant persons. Any investment or investment activity to which this document relates is only available to relevant persons and will be engaged in only with relevant persons. In other EEA countries, the report has been issued to persons regarded as professional investors (or equivalent) in their home jurisdiction. Australia: This material is issued and distributed by JPMSAL in Australia to "wholesale clients" only. This material does not take into account the specific investment objectives, financial situation or particular needs of the recipient. The recipient of this material must not distribute it to any third party or outside Australia without the prior written consent of JPMSAL. For the purposes of this paragraph the term "wholesale client" has the meaning given in section 761G of the Corporations Act 2001. J.P. Morgan's

JPMorgan Chase Bank NA

Michael Feroli (1-212) 834-5523 michael.e.feroli@jpmorgan.com Daniel Silver (1-212) 622-6039 daniel.a.silver@jpmorgan.com

Economic Research Meet the new, frugal US consumer August 9, 2018

J.P.Morgan

research coverage universe spans listed securities across the ASX All Ordinaries index, securities listed on offshore markets, unlisted issuers and investment products which Research management deem to be relevant to the investor base from time to time. J.P. Morgan seeks to cover companies of relevance to the domestic and international investor base across all GIC sectors as well as across a range of market capitalisation sizes. Germany: This material is distributed in Germany by J.P. Morgan Securities plc, Frankfurt Branch which is regulated by the Bundesanstalt für Finanzdienstleistungsaufsicht. Hong Kong: The 1% ownership disclosure as of the previous month end satisfies the requirements under Paragraph 16.5(a) of the Hong Kong Code of Conduct for Persons Licensed by or Registered with the Securities and Futures Commission. (For research published within the first ten days of the month, the disclosure may be based on the month end data from two months prior.) J.P. Morgan Broking (Hong Kong) Limited is the liquidity provider/market maker for derivative warrants, callable bull bear contracts and stock options listed on the Stock Exchange of Hong Kong Limited. An updated list can be found on HKEx website: http://www.hkex.com.hk. Korea: This report may have been edited or contributed to from time to time by affiliates of J.P. Morgan Securities (Far East) Limited, Seoul Branch. Singapore: As at the date of this report, 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 report. Arising from its role as 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. In addition, JPMSS and/or its affiliates may also have an interest or holding in any of the securities discussed in this report – please see the Important Disclosures section above. For securities where the holding is 1% or greater, the holding may be found in the Important Disclosures section above. For all other securities mentioned in this report, JPMSS and/or its affiliates may have a holding of less than 1% in such securities and may trade them in ways different from those discussed in this report. Employees of JPMSS and/or its affiliates not involved in the preparation of this report may have investments in the securities (or derivatives of such securities) mentioned in this report and may trade them in ways different from those discussed in this report. Taiwan: Research 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 which may give rise to conflicts of interests, unless otherwise disclosed in the "Important Disclosures" in this material. India: For private circulation only, not for sale. Pakistan: For private circulation only, not for sale. New Zealand: This material is issued and distributed by JPMSAL in New Zealand only to persons whose principal business is the investment of money or who, in the course of and for the purposes of their business, habitually invest money. JPMSAL does not issue or distribute this material to members of "the public" as determined in accordance with section 3 of the Securities Act 1978. The recipient of this material must not distribute it to any third party or outside New Zealand without the prior written consent of JPMSAL. Canada: The information contained herein is not, and under no circumstances is to be construed as, a prospectus, an advertisement, a public offering, an offer to sell securities described herein, or solicitation of an offer to buy securities described herein, in Canada or any province or territory thereof. Any offer or sale of the securities described herein in Canada will be made only under an exemption from the requirements to file a prospectus with the relevant Canadian securities regulators and only by a dealer properly registered under applicable securities laws or, alternatively, pursuant to an exemption from the dealer registration requirement in the relevant province or territory of Canada in which such offer or sale is made. The information contained herein is under no circumstances to be construed as investment advice in any province or territory of Canada and is not tailored to the needs of the recipient. To the extent that the information contained herein references securities of an issuer incorporated, formed or created under the laws of Canada or a province or territory of Canada, any trades in such securities must be conducted through a dealer registered in Canada. No securities commission or similar regulatory authority in Canada has reviewed or in any way passed judgment upon these materials, the information contained herein or the merits of the securities described herein, and any representation to the contrary is an offence. **Dubai:** This report has been issued to persons regarded as professional clients as defined under the DFSA rules. Brazil: Ombudsman J.P. Morgan: 0800-7700847 / ouvidoria.jp.morgan@jpmorgan.com.

General: Additional information is available upon request. Information has been obtained from sources believed to be reliable but JPMorgan Chase & Co. or its affiliates and/or subsidiaries (collectively J.P. Morgan) do not warrant its completeness or accuracy except with respect to any disclosures relative to JPMS and/or its affiliates and the analyst's involvement with the issuer that is the subject of the research. All pricing is indicative as of the close of market for the securities discussed, unless otherwise stated. Opinions and estimates constitute our judgment as of the date of this material and are subject to change without notice. Past performance is not indicative of future results. 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 recipient of this report must make its own independent decisions regarding any securities or financial instruments mentioned herein. JPMS distributes in the U.S. research published by non-U.S. affiliates and accepts responsibility for its contents. Periodic updates may be provided on companies/industries based on company specific developments or announcements, market conditions or any other publicly available information. Clients should contact analysts and execute transactions through a J.P. Morgan subsidiary or affiliate in their home jurisdiction unless governing law permits otherwise.

"Other Disclosures" last revised June 30, 2018.

Copyright 2018 JPMorgan Chase & Co. All rights reserved. This report or any portion hereof may not be reprinted, sold or redistributed without the written consent of J.P. Morgan.