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UNITED STATES

Selected Issues

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UNITED STATES

Selected Issues

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I. U.S. HOUSEHOLD WEALTH AND SAVING: THE MICRO STORY BEHIND THE MACRO DYNAMICS[1]

Aggregate savings statistics reveal little about the types of households that drove down the U.S. saving rate before the 2008 crisis and its subsequent recovery. Using PSID micro data, this paper demonstrates that households with consistently lower income growth in the years prior to the crisis experienced larger declines in their saving rates and a larger rise in their indebtedness before the crisis, contributing significantly to the dynamics of the mean saving rate. Households with a larger share of total assets in housing and higher debt-to-income ratios raised their saving rates more sharply after the crisis, from depressed levels. The findings indicate that groups whose balance sheets were more adversely affected by the housing bust have made limited progress in rebuilding their net worth through active savings, suggesting that in the absence of asset price appreciation these households may wish to save more in the future.

A. Introduction

1. **Households' consumption-saving decisions have an important bearing on the U.S. economic outlook**. In the years leading up to the 2008–09 recession, U.S. households played an important role in supporting U.S. and global growth by sustaining high levels of consumption. This development was mirrored by a decline in the saving rate of the aggregate household sector from 10 percent in the early 1980s to about 1 percent in 2005. The decline in the saving rate was facilitated by increasing credit availability and surging asset values—the equity price bubble in the second half of the 1990s and the house price bubble in the first half of the 2000s. The saving rate stopped declining in 2006, as the house price bubble began to deflate, and increased significantly during the recession. The pace at which output will recover going forward depends, in part, on the future saving behavior of U.S. households.

Household Saving Rate and Wealth

Sources: Bureau of Economic Analysis; and Federal Reserve Flow of Funds Accounts.
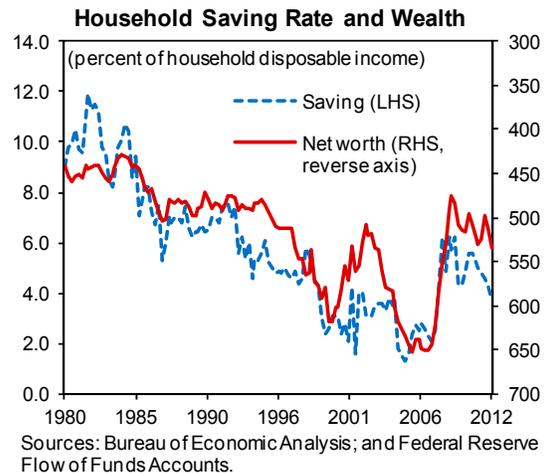
2. **Average wealth and income figures on their own may not be sufficient to draw strong insights into the dynamics of savings and consumption**. As of 2012Q1, the ratio of

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aggregate household net worth to disposable income (DI)—a key driver of the personal saving rate—stood above its pre-bubble historical averages. The recovery of aggregate net worth has however been mostly driven by the return of equity prices toward their pre-crisis levels, benefiting mainly upper-income households (as it is usually the higher-income households that own stocks). By contrast, housing wealth—traditionally the main saving vehicle for middle-income groups—remained almost 30 percent below its peak. Likewise, although the household debt-to-DI ratio has declined significantly, from 134 percent of DI in 2007 to 114 percent in 2012Q1, it remains higher than its levels before the housing bubble. Moreover, evidence suggests that the aggregate reduction in household debt was mainly driven by weak inflows and defaults.[2] Thus, for a large share of households who are current on their mortgage debt, net worth could still be below desired levels.[3] Recent evidence from the Federal Reserve's 2010 Survey of Consumer Finances (SCF) also indicates that, despite the recovery in aggregate wealth statistics, the majority of U.S. households continue to struggle with real net worth levels that are below their mid-1990s levels. Accordingly, these households may continue to repair their balance sheets going forward through additional savings.[4]

3.   **An important question is how the various heterogeneities across households affect the dynamics of aggregate consumption and savings.** The evidence on growing U.S. income and wealth disparities has raised new questions about the importance of differences between households for trends in aggregate data. For example, some analysts have argued that, the sluggish growth in real incomes during the decade preceding the crisis pushed middle-income families to borrow more to sustain their living standards. The increased indebtedness, in turn, was enabled by rising house prices and more valuable housing collateral. Following the crisis, researchers have investigated whether the pre-bubble growth in debt was concentrated at the "bottom" of the wealth and income-growth distributions. For instance, Kumhof and Ranciere (2010) document that the surge in household debt as a share of DI during the 2004–07 period was driven by the bottom 95 percent of the wealth distribution, and Mian and Sufi (2009) show that in the 2002–05 period, mortgage credit

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[2] Kennedy (2010) finds, using aggregate data, that roughly two-thirds of the reduction in household debt between 2008 and 2010 had been through charge-offs. Bhutta (2012) uses data on individual credit records to show that the decline in mortgage debt was to a large extent driven by weak inflows (given historically weak first-time home-buying) rather than outflows (such as through pay-downs and foreclosures). However, he also documents that on the outflows side, borrowers generally are not paying down their mortgage balances more aggressively than in the past, suggesting limited decreases in mortgage debt for households with an existing mortgage balance.

[3] The Survey of Consumer Finances released by the Federal Reserve in June 2012 confirms that all income deciles except the highest had mean net worth levels in 2010 that were below their 2004 levels in current dollar terms (Kennickell et. al., 2012, Table 4).

[4] Using aggregate data and state-space methods, Sommer and Slacalek (2012) estimate target net wealth at 525 percent of disposable income at end-2009. Actual net wealth was about 510 percent of disposable income at end-2009, and stood slightly below 500 percent of disposable income at the end of 2011.

expanded more strongly in ZIP codes with lower income growth, while the opposite had been true in previous periods. Dynan (2012a) discusses how heterogeneities across households in terms of income, balance sheets, age, and the degree of liquidity and credit constraints may be affecting aggregate consumption dynamics, including since the 2008–09 recession. Obtaining insights on these issues calls for empirical evidence of how the characteristics of different groups of households have changed over time and the share of aggregate consumption and savings accounted for by the different groups.

4.   **This paper presents evidence on the balance sheet and saving heterogeneity across U.S. households, with the aim of better understanding the drivers of aggregate savings.** We seek to characterize the types of households that depressed the aggregate saving rate in the housing-boom years (that is, between the 1999–2007 surveys) and those that accounted for its surge in the aftermath of the 2008 crisis. We focus on several aspects of heterogeneity. Following the literature that documents the increasingly uneven distribution of income and wealth in the United States, we describe how different segments of the income distribution contributed to the changes in the aggregate saving rate over time. We also document the experiences of households that had a larger share of their wealth in housing and households that entered the crisis with a higher level of debt. To the best of our knowledge, our study is the first that tracks household saving behavior and balance sheets through both the pre- and post- bubble periods, differentiating between income levels, growth rates, and other household attributes.

5.   **To study longer-term household trends, we make use of a well-established longitudinal dataset on households, the Panel Survey of Income Dynamics (PSID)**. As a panel survey collecting data from the same households over many years, it allows us to track household behavior over time, and condition our analysis on factors such as a household's income growth over a given period. Repeated cross sections (if panel data were not available) would not allow for a direct measurement of how a given household responds to changes in its income or assets over time. The data collected also allow us to determine a given household's saving out of its current income.[5] In comparison, the SCF, which contains very comprehensive information on the income and wealth of U.S. households, only asks a qualitative question about whether the surveyed households save or not, but not their amount of saving. However, the PSID does not capture well the top and bottom tails of the income and wealth distributions (in contrast to the SCF that oversamples the wealthy and the Survey of Income and Program Participation of the Census Bureau that oversamples government transfer program participants, who are often poor). Comparing the mean statistics in the

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[5] The PSID also contains information on household consumption in addition to data on household wealth and income. By contrast, the BLS' Current Population Survey (CPS) collects data on income for individuals; the Consumer Expenditure Survey (CEX) collects data on consumption, income, and some information on asset holdings for households; and the SCF collects data on wealth and income for households. Thus, the PSID is the only survey that combines information on household saving and wealth.

PSID to the corresponding aggregate measures from the NIPAs nevertheless allows us to gauge the importance of the tails of the distribution in driving the aggregate saving and balance sheet dynamics.

6.   **The findings point to significant heterogeneity in saving rates and balance-sheet repair**. Households experiencing lower income growth during 1999–2007 saw a sharper decline in their saving rates and a larger rise in their indebtedness before the crisis, contributing significantly to the decline in the overall saving rate. These households were less able to reduce their debt and raise their net worth after the crisis. Households that had a larger share of their wealth saved in their primary residences during 1999–2007 saw their saving rate rebound sharply between 2009 and 2011. Nonetheless, the saving rate of these households during the 1999–2011 period remained well below the saving rates of those less reliant on housing as a store of wealth. The findings suggest that an important share of U.S. households may continue to seek to rebuild their net worth through active savings.

7.   **The rest of the paper is organized as follows.** Section II introduces our dataset and discusses where the mass of our sample lies within the U.S. income and wealth distribution. It also presents the mean saving rates and wealth ratios for the PSID sample, comparing them with aggregate saving and wealth levels for the U.S. household sector. Sections III and IV explore the importance of income growth and housing in explaining the decline in the saving rates during the housing boom years. Section V examines whether the households that entered the recession with higher debt burdens subsequently experienced a sharper correction in their saving rates. Section VI concludes.

B. Data

Structure and Content of the Dataset

8.   **The paper uses data from seven PSID survey waves between 1999 and 2011**. The PSID is a longitudinal survey that follows a sample of households taken in 1968 and their offspring. As such, the PSID does not capture the immigrant population, but is thought to mimic the dynamics of the aggregate population reasonably well. We focus on the 1999 to 2011 sample because there are wealth and saving data available in every wave. The saving data in the 2001, 2003, 2005, 2007, 2009, and 2011 waves cover the preceding two years, while the saving data in 1999 cover the preceding five-year period, 1994–98. The most recent data, from the 2011 survey, are preliminary with the final results expected to be released in late 2012.

9.   **The PSID includes a module on wealth which allows us to compute active saving**—defined as the net purchase of assets. Since 1999, the PSID survey inquires about the active saving of households in its wealth module. The PSID categorizes wealth into eight components: (1) main home equity, (2) other real estate equity, (3) equity in private business or farms, (4) net worth of vehicles, (5) checking and savings accounts, money market mutual fund accounts, certificates of deposits, government saving bonds, treasury bills, including

those in investment retirement accounts, (6) equities in publicly traded corporations, mutual funds, investment trusts, and investment retirement accounts, (7) other assets—corporate bonds, rights in a trust or estate, cash value of life insurance, and valuable collections, and (8) total non-collateralized debt which includes credit card debt, student loans, and other unsecured debt. When applicable, households are asked to report net wealth subtracting debt that is collateralized by the specific asset in question (applicable to categories (1), (2), (3) and (4), although households do report their gross assets and debt for main home equity, (1)). The PSID also includes a separate pension module that inquires about saving in private pension accounts and the wealth held in private defined-contribution pension accounts. We do not include pension saving in our analysis since the results of the 2011 pension module remain unpublished. But data available for 1999–2009 suggest mean saving in pensions to be fairly stable over time; hence their inclusion in the analysis is unlikely to affect our main findings. We follow Juster et. al. (2005) in the way we calculate active savings. For wealth categories with potentially large capital gains (i.e., (1),(2),(3), and (6)), active savings are computed as the difference between the amount invested and the amount removed or debt repaid between two periods. For example, active saving in the main home is computed as the value of improvements in the house plus the decrease in the main home mortgage debt for the year(s) a household does not move and the change in net equity in the main home in the year(s) it moves. For wealth categories where capital gains are not important, active savings are computed as simply the change in net wealth between two periods.

10.   **The timing of the variables varies**. The families are interviewed early in the year, with all interviews completed by the middle of the year. Income is recorded for the calendar year preceding each survey. Household saving data are reported for roughly the previous two years from the 2001 survey onwards and for the previous five years in the 1999 survey. Wealth stocks are recorded as of the time the survey is conducted—generally at some point in the first half of the survey year. For instance, in the 2005 survey, wealth is recorded as of the interview date, in early 2005, income is recorded for 2004, and total savings are recorded over 2003, 2004, and the part of 2005 that precedes the interview.

Representativeness of the Survey

11.   **About seventy percent of the households in the PSID sample fall into the middle three quintiles of the U.S. income distribution**. After dropping outliers and households that lack key information, we end up with roughly 3500 household observations per year.[6] The first panel of Table 1 compares the distribution of income reported in the 2007 PSID survey

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[6] Following Juster et. al (2005) and Cooper (2011), the top and bottom 1 percent of the income and consumption distributions are dropped to limit outliers. So are the households with missing homeownership information in the current and previous surveys (only current survey for 1999), homeowners that have moved since the last survey(as they could potentially misreport passive capital gains/losses as active saving/dissaving—as appears to be the case in the raw data for 2009), and homeowners whose mortgage debt is more than twice as large as the value of their house.

(that is, 2006 income) with the distribution for the same year in a comprehensive dataset built by the Congressional Budget Office (CBO).[7] The comparison is based on before-tax income, which is measured somewhat differently in the two datasets.[8] The first row shows the quintile cutoffs from the CBO tables. The second line shows the percentage of households in the PSID that fall within these income brackets. Taken at face value, this exercise suggests that 69 percent of the PSID sample lies in the middle three quintiles of the CBO distribution, with less than 20 percent of the PSID sample falling into the top and bottom quintiles. Given the differences in measurement, which could be particularly important at the lower and upper tails of the distribution, we do not draw precise inferences—but conclude that the bulk of the PSID households are "middle-income" families.

12.   **The PSID also represents the wealth holdings of middle- and upper-middle income households reasonably well**. A comparison is carried out between the 2007 PSID and the Federal Reserve's 2007 SCF.[9]

- The mean incomes for the bottom 9 deciles of the income distributions are somewhat higher in the PSID than in the SCF, while average income for the top decile is significantly higher in the SCF, indicating that the PSID households mostly fall into the middle three quintiles plus the ninth decile of the SCF income distribution.[10,11]

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[7] The CBO dataset combines data from the Statistics of Income, a nationally representative sample of individual income federal tax returns collected by the Internal Revenue Service, with data from the Census Bureau's Current Population Survey (CPS), which ensures coverage for the lower end of the income distribution.

[8] The CBO's income measure is before transfers and taxes. It includes all cash income (both taxable and tax-exempt) and the value of income received in-kind from sources such as employer-paid health insurance premiums. It also includes taxes paid by businesses: corporate income taxes are imputed to households with capital income and the employer's share of payroll taxes (which are considered to be part of labor income) are imputed to employees. It does not include federal transfers and social security income. The PSID's before-tax income measure includes taxable income, transfer income, and social security Income. Thus, the PSID's before-tax income measures would tend be higher than the CBO's for households in the lower income groups (since only the PSID measure includes transfers) but it could be lower for higher-income groups (given its exclusion of imputed corporate taxes). At the same time, the inclusion of the employer-share of payroll taxes in the CBO measure but not the PSID measure would boost the incomes of the employed households in the CBO dataset.

[9] Given their lower response rate, the SCF over-samples top-income households to ensure that they are well represented.

[10] PSID households reported their 2006 income in the 2007 wave. For comparability with the SCF, we impute their 2007 income based on the growth rate of nominal disposable income in the NIPAs.

[11] Federal Reserve Board staff summarize the main findings of the SCF surveys in working papers; for the 2007 survey, see http://www.federalreserve.gov/pubs/bulletin/2009/pdf/scf09.pdf. We use the findings from this paper to draw a comparison between the PSID and SCF. The paper reports average wealth and income by income quintile. The components of the before-income tax in the SCF are wages, self-employment and business income, taxable and tax-exempt interest, dividends, realized capital gains, other support provided by the government, pension and withdrawals from retirement accounts, social security, alimony, other support payments, and miscellaneous sources of income for all members of the household.

- The bottom four panels of Table 1 compare households' holdings of specific asset categories by income quintile in the SCF and PSID (with the upper quintile broken into two, in line with the SCF tables). The upper 10th decile of the SCF income distribution has significantly higher average holdings of assets and debt compared with the top 10th decile of the PSID, reflecting that the SCF over samples-the top income groups (which have a lower response rate) to ensure an accurate representation, while the PSID does not capture many households with very high incomes and wealth. The second panel of Table 1 compares direct holdings of stocks (that is, excluding indirect holdings through IRAs and other retirement accounts) between the SCF and the PSID. It shows that stock holdings are modestly lower in the PSID's bottom 3 quintiles, despite somewhat higher incomes, and significantly lower for the top 2 quintiles. Consistent with higher mean incomes, however, mean value of primary residences and mortgage debt (third and fourth panels) tend to be higher in the PSID for the bottom 4 quintiles of the income distribution. The last panel shows that mean values of non-mortgage debt are very similar for the bottom four quintiles. It is not surprising that the PSID does not match the asset holdings of higher income households when compared with the SCF given that the SCF oversamples high income households, and thus better captures their average balance sheet holdings.

Average Savings and Wealth in the PSID

13.   **Table 2 presents the means of income, net wealth, and active savings from the PSID wave periods under study**. Disposable income is presented for the preceding year; 2011 income is imputed using households' reported 2008 income and data on state-level income growth from 2008 to 2010, since the preliminary 2011 data release did not include information on income.[12] Saving rates are obtained by scaling savings over the previous two years by twice the income in the previous year. For balance-sheet variables, we present the values from the survey year (that is, as of the date of the interview).

14.   **The PSID exhibits a boom-bust cycle in net wealth and movements in disposable income that are in line with aggregate statistics**. As expected, given the under-representation of very wealthy households, both mean disposable income and net wealth (NW) in the PSID are lower than the comparable measures in the National Income and Product Accounts (NIPAs) and the Flow of Funds accounts (FoF). However, the PSID and NIPA growth rates of household DI are similar in most periods (an exception is the 2003 survey, for which the PSID has significantly lower DI growth compared to the NIPAs).[13] Consistent with the decline in house values from mid-2006 onwards and the decline in stock prices in 2008, average net wealth fell by around 34 percentage points of DI between the

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[12] The before-tax income data recorded in the PSID are converted into disposable income (that is, after taxes and transfers) using the NBER's TAXSIM software.

[13] We don't draw inferences on income growth in 2011, since the PSID income data are imputed for that year.

2007 and 2009 surveys.[14] Average net wealth rebounded by 22 percent of DI between the 2009 and 2011 surveys, driven by a rebound in financial wealth (the timing of the 2009 and 2011 surveys largely coincided with the post crisis trough and subsequent peak of the S&P500 stock price index, which rose by some 55 percent between mid-2009 and mid-2011).

15.   **Overall, the mean saving rate in the PSID exhibits the decline in the boom years and an increase after the mid-2000s, particularly in the 2011 wave**.[15] Rows three and four in Table 2 present statistics on household saving. Four observations stand out:

- *The mean PSID saving rate is generally lower than the personal saving rate in the NIPAs*. The shortfall is particularly large in the 2003, 2005, and 2009 surveys.[16] Two factors help to explain this. First, employee savings under private pension plans are excluded from PSID active savings but not the NIPAs. Available data from the PSID's pension module suggests that pension savings fluctuated in a narrow range of 0.9–1.2 percent of DI in 2001–09, thus the pension data can explain some of the difference between the NIPA and the PSID saving rate levels. Second, as documented by Dynan, Skinner, and Zeldes (2004), and consistent with our findings described below, higher income households have higher saving rates, which would drive the aggregate NIPA saving rate higher than the PSID mean. In that sense, the mean PSID saving rate can be seen as an indicator for the saving rate of middle-income households, while aggregate statistics are, to some extent, driven by top-income households.

- *In broad terms, the mean PSID saving rate follows the underlying (U-shaped) time series profile of the NIPA household sector saving rate*—with a significant decline during the early boom years (between the 1999 and 2005 waves) and an increase between the 2005 and 2011 waves. However, some of the higher frequency movements in the PSID in the 2007 and 2009 surveys are at odds with those in the NIPAs. Some of the differences are likely due to different measurement of vehicle saving—the drop-off in auto purchases in 2008 would be captured as a higher depreciation of the auto-stock and lower saving in the PSID, whereas it would be

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[14] Dynan (2012b) compares the growth rates of aggregated house values reported by the PSID respondents with those of the CoreLogic National index (CNI) and finds that the PSID data shows a boom-bust pattern broadly in line with the CNI, with some differences in levels and timing that could be due to households being too optimistic about their house value or reporting values with a lag. Lovenheim (2011) reports that the mean and median house prices in the PSID track the FHFA National House Price Index (HPI) quite closely, with some differences in the recent years that are likely due to the fact that the PSID captures new houses while the HPI excludes them.

[15] The mean saving rate is calculated as mean saving divided by mean income, rather than the mean of the household-level saving rates. This method gives a higher weight to higher income households as do aggregate statistics (which report total savings divided by total income). It also reduces the contribution of outliers.

[16] Under fully consistent measurement the gap would actually have been larger since the PSID captures only the depreciation of a vehicle as dissaving whereas the NIPAs record the entire purchase as consumption.

captured as lower consumption and higher savings in the NIPAs. The differences are further discussed in the next two bullets.

- *The PSID mean saving rate declined in 2007–08, in contrast to the rise in the aggregate NIPA saving rate over the same period*. The decline is particularly sharp for active saving in cash and deposits, which households should be able to report accurately, and vehicles (the details are not reported in Table 2, but are available upon request). This finding suggests that middle-income families dipped into their savings to sustain consumption at the peak of the crisis, perhaps not foreseeing the depth and persistence of the coming decline in incomes. This surprising aspect of the dataset is very robust; many sub-groups of households exhibit this pattern (as revealed later when we look at the saving rate dynamics for different sub-groups). The recently released 2010 SCF has also revealed that the share of households that are able to save out of their income declined to 52 percent in 2010 from 56.4 percent in 2007. Thus, the PSID saving data could be picking up the fact that fewer households were able to save any of their income from 2007 onwards.

- *Based on preliminary data from the 2011 survey, the mean PSID saving rate increased significantly in 2009–10*. At the same time, both mean net worth and mean net housing equity in 2011 (as a ratio to mean imputed DI for 2011) remained not only well below their 2007 levels, but also were slightly lower than their 1999 levels (second panel of Table 2). In nominal dollar terms, net worth was only slightly above its level in 2005, while net housing equity was well below its 2005 level, implying a substantial erosion in real terms (consumer prices increased by some 15 percent between early 2005 and 2011). The mean debt-to-DI ratio in 2011 was also higher than in any survey between 1999 and 2007, although in nominal terms, mean debt per household declined between the 2009 and 2011 surveys by about US$1500. Taken together, these findings highlight the extensive damage that the housing bubble and financial crisis have caused for the balance sheets of middle-income households. The rise in the saving rate is consistent with households saving more in response to increased uncertainty about future economic conditions. The increased saving is also consistent with households saving to rebuild their net worth, as the economy improved, given the dramatic loses in wealth due to falling house prices. Whether saving remains high going forward will depend on households' desire for precautionary saving and continued balance-sheet rebuilding.

C. Saving Behavior Before the Crisis—Did Income Growth Matter?

16.   **Figure 1 highlights an aspect of the housing boom that has been much discussed but not explored empirically: it represented growing dissaving by not only low-income but also low-income-growth households**. Figure 1 compares patterns in saving rates for households ranked by their income growth between 1999 and 2007 and grouped in terciles. Based on this cut, differences in income growth between the terciles are very large. While the

lowest tercile saw an average decline in real annual DI by about 8 percent between 1999 and 2007, the upper group experienced an average increase of 16 percent. The top left chart in the panel shows a striking difference in the saving behavior between the tercile with the lowest income growth and the two other terciles between the 2001 and 2005 surveys. The saving rates of the three groups were broadly similar in 1999 (about 3–4 percent). The saving rate of the lowest income-growth tercile declined from around 4 percent in 1999 to about -2 percent in 2005. The saving rates of the middle- and high-income groups also declined, but by much less—from 3–4 percent in 1999 to 1–1.5 percent in 2005. The decline of the saving rate for the low income-growth group was thus roughly twice as large as the declines for the other two groups during the boom years. The qualitative behavior of the saving rate was broadly similar across groups between 2007 and 2011. However, while the saving rates of the two higher- income growth terciles returned to their 1999–2001 levels of 3–4 percent by 2011, the saving rate lower income-growth tercile remained relatively low, closer to 1 percent.

17.   **The declining saving rate among households that experienced low income growth also had a material impact on the overall mean saving rate**. The top-right chart in Figure 1 shows the contribution of each group to the overall mean saving rate for the households that were included in this analysis, to gauge how much the group with lowest income growth mattered to the overall dynamics. Interestingly, the contributions of the three groups to the mean saving rate were similar in 1999. While the two groups with higher income growth each contributed around 1 percentage point to the 4 percentage point drop in the overall saving rate between 1999 and 2005, the group with the lowest income-growth contributed around 2 percentage points—half of the overall decline. This evidence suggests that households experiencing sluggish income growth made a meaningful contribution to the decline in the U.S. personal saving rate during the housing-boom years.

18.   **Although low-income growth households experienced similar house price trends as other groups, they experienced a greater increase in mortgage debt as a share of disposable income**. The bottom-left chart in Figure 1 shows that (self-reported) house price growth was not stronger for the low-income growth households, suggesting that differential house price appreciation was not a driver behind the saving rate differences. The bottom-right chart compares mortgage debt as a percentage of disposable income and shows that it followed different trends across the groups. Between the 1999 and 2005 surveys, mortgage debt decreased as percentage of disposable income for the top two terciles with higher income growth, with a prominent decrease in the debt of the highest tercile. By contrast, mortgage debt increased as a share of disposable income for households with the lowest

income growth.[17] Since 2007, mortgage debt relative to income has declined for the group of low income growth households, while it has risen somewhat for the other two groups.

Figure 1. Saving Rates by Income Growth over 1999-2007
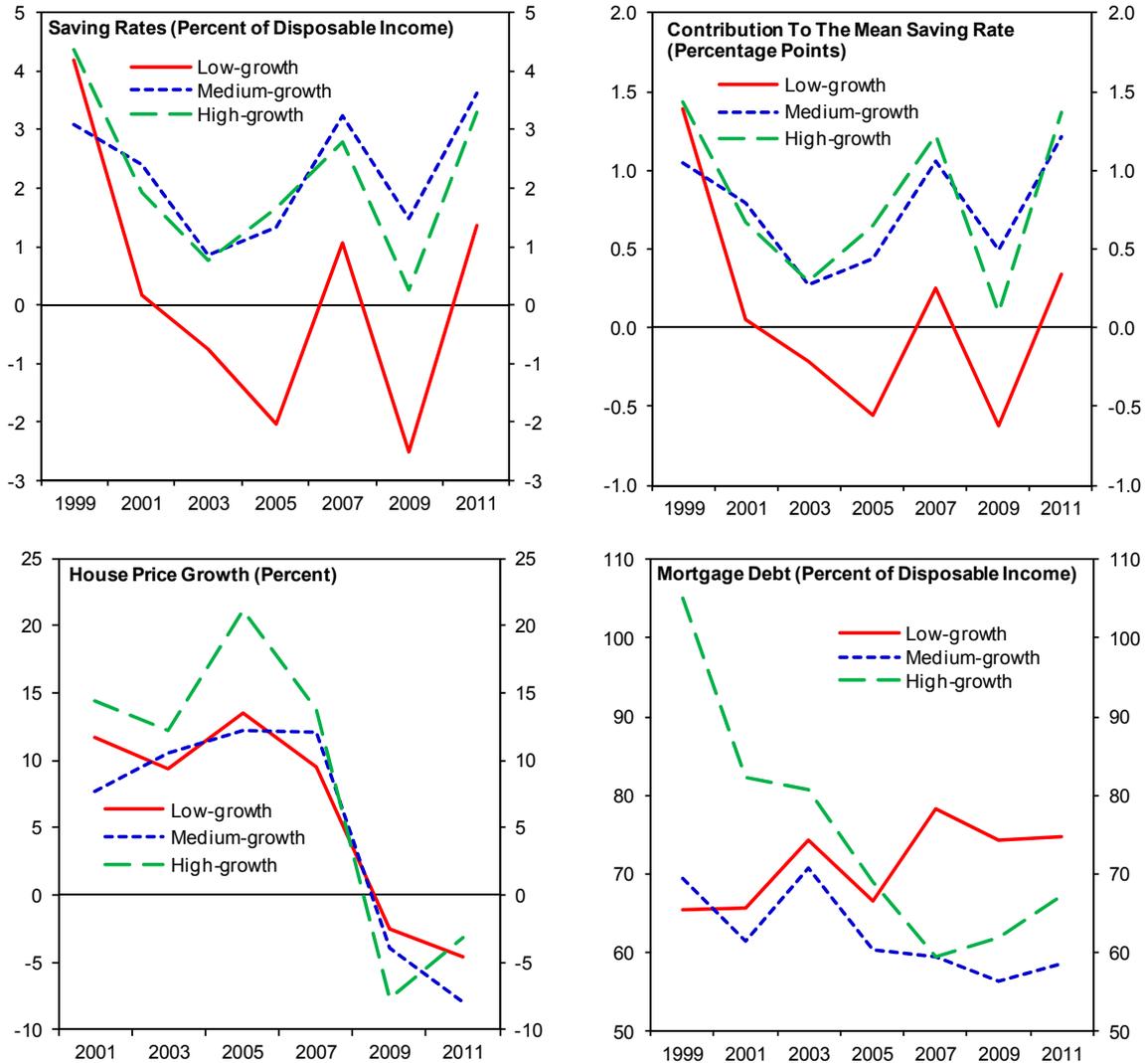
Sources: PSID; and Authors' estimates.
Notes: Low-, Medium-, and High-growth refer to the bottom, middle, and top terciles of income growth between 1999-2007. Saving rates are the mean savings for the tercilescaled by the mean disposable income of the tercile, Mortgage debt is mean debt scaled by mean disposable income for the tercile. Contributions to mean savings are calculated by multiplying the mean saving rate of the tercile by the share of the tercile in total income. (for the overall sample). House price growth is mean house price growth for the tercile.

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[17] This finding is similar to the one reported in Mian and Sufi (2009), which shows that mortgage credit grew more strongly in ZIP codes that were experiencing negative income growth over 2002–05, unlike in the 1991–2001 and 2005–07 periods, when the correlation was positive.

19.   **Households with lower average income levels during the 1999–2007 period also had lower saving rates, but their contribution to the overall mean saving rate was small** (not shown).[18] Unlike households experiencing low income growth, households that had lower average income *levels* did not experience a marked decline in their saving rates between 1999 and 2007—their saving rates were consistently lower than those of higher income households in every period.[19] For instance, in the 2005 survey (when the mean PSID saving rate bottoms out), the saving rate of the bottom tercile of the distribution of average 1999–2007 income levels was -3.1 percent, while the tercile with highest average income had a mean saving rate of 1.8 percent. As expected, households in the bottom tercile play a limited role in influencing the overall mean saving rate, given their relatively lower income and saving levels.

D.   The Role of Housing

20.   **Changes in active net savings in primary residences explain a significant share of the dynamics of the mean PSID saving rate over 1999–2011**. Saving in households' main home contributed 1 percentage point of the 4 percentage points decline in the saving rate between the 1999 and 2003 surveys, and nearly 3 percentage points of the roughly 4 percentage point increase in the saving rate between 2005 and 2011. This pattern is consistent with households tapping home equity loans for consumption during the housing boom and losing access to new mortgage credit—both for new homes and for home equity loans on existing homes—in the aftermath of the bubble (see Cooper, 2011, and Bhutta,

Changes in the Saving Rate: Contributions by Instrument
(percentage points)
- Housing equity
- Business, vehicles, other real estate
- Financial assets (including non-mortgage debt)

1999-2005   2005-2011

Sources: PSID; and Authors' estimates.

2012). Other large contributors to the decline and subsequent rise in the overall mean savings rate were non-mortgage debt and gross financial assets. In particular, the increase in non-mortgage debt contributed about ¾ percentage point to the nearly 4 percentage points decline in the saving rate between the 1999 and 2005 surveys, and ½ percentage point to the

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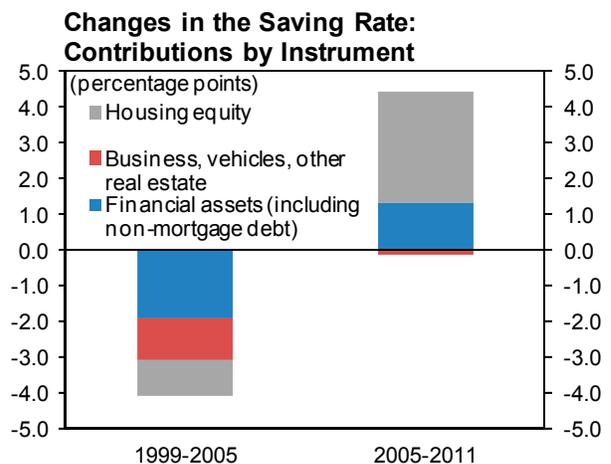
[18] The Appendix documents the bivariate frequency distribution of households across the income-growth and income level terciles, as well as the groups examined later in the paper. The results show that the households are distributed fairly uniformly across the groups, for instance, income-growth and housing-dependency (which we examine later) are not highly correlated across households.

[19] We sort the households according to average income over 1999–2007 rather than by income in any given year, as the latter could be tainted by the impact of temporary income shocks. The finding of low saving rates for the lowest income households in any given survey is likely to reflect, in part, the consumption smoothing of households that faced temporary income losses.

4 percentage points increase between 2005 and 2011 surveys (not shown separately). This pattern is in line with the generally tighter credit conditions facing the household sector since the financial crisis.

Figure 2. Saving Rates for Households with Varying Dependence on Housing Wealth
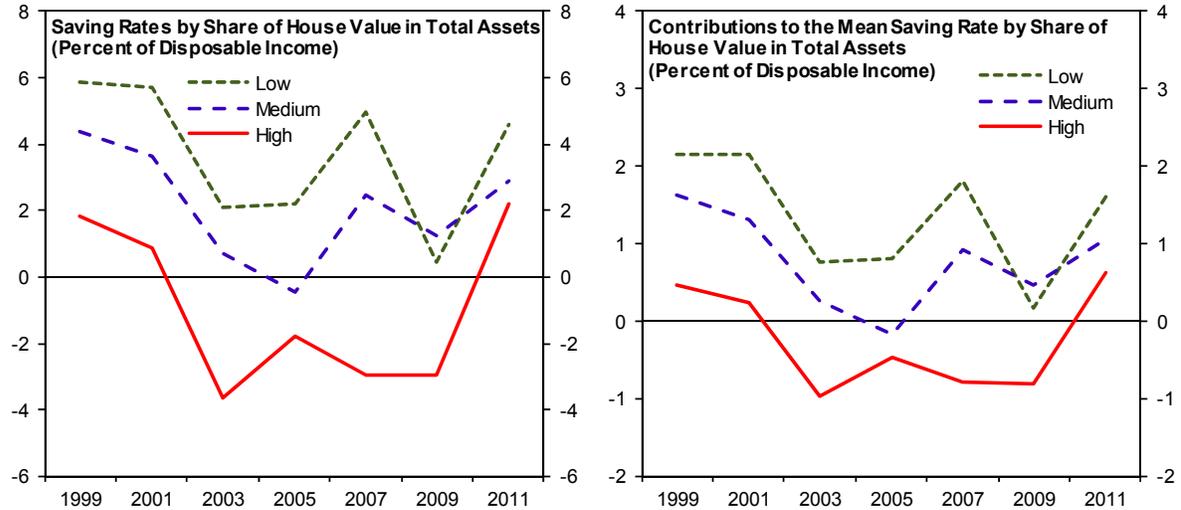
Source: PSID; and Authors' estimates.
Notes: Saving rates for the terciles of the distribution ranking households by the average share of the value of their house in their total assets in 1999-2007, and the contributions of the terciles to the mean PSID saving rate.

21. **Households more dependent on housing wealth in 1999–2007 had lower saving rates in general and raised their saving rates sharply in 2011**. Lovenheim (2011) and Dynan (2012b) show that the changes in average house values in the PSID line up reasonably well with the aggregate house price data (see footnote 14). Even if households measure the value of their house with error though, they are likely to judge reasonably accurately the relative importance of the value of their house in their total wealth. The tercile of households for which housing wealth accounted for the highest share of total assets in 1999–2007— typically the households with lower wealth and income—had a mean saving rate close to 2 percent in 1999, and lowered it sharply to about -3.5 percent in 2003, where it stayed until 2009. In 2011, the saving rate of this group rebounded to about 2 percent. The group with medium dependency on housing wealth also saw a sharp decline in 1999–2005 but had already raised its saving rate by 2007. In contrast, the households with the lowest housing-dependency lowered their saving rates more modestly in 1999–2005 and actually lowered their saving rates in 2009, possibly reflecting their greater ability to smooth consumption during the crisis. The tercile of households most dependent on housing assets, and thus most vulnerable to a house price downturn, did make a meaningful contribution to the downward trend in the mean saving rate during the boom years.[20] With its active saving rate returning to

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[20] Kochhar et. al. (2011) find that the housing bust and the 2008–09 recession led to a much greater reduction (in percentage terms) in the net worth of minorities than of whites. The disproportionate impact reflected in turn the fact that home equity is much more important to the wealth of Hispanic and black households than to white

(continued)

its 1999 level in 2011 and house prices stagnant, this group has made modest progress in rebuilding its net worth.

E. Did Households with Higher Debt Burdens in 2007 Become More Thrifty After the Crisis?

22. **Households that entered the recession with the highest debt ratios experienced a sharper rise in their saving rate in its aftermath.** Some analysts have argued that high debt stocks—and not just wealth losses—may have been weighing on the growth of private consumption during the recovery from the recession (see, e.g., Dynan, 2012b). Figure 3 shows that households with the top quintile of debt-to-DI ratios as of 2007 had a very sharp rebound in their saving rates of some 7 percentage points, on average, between the 2009 and 2011 surveys (after lowering their saving rates further between 2007 and 2009). The contribution this group made to the increase in the saving rate between the 2007 and 2011 surveys was also substantial, at close to 1.5 percentage points. Figure 3 highlights that highly-indebted households, as a group, contributed more to the increase in the saving rate between 2009 and 2011 than each of the bottom four quintiles. The question remains whether these households raised their saving rates voluntarily due to increased economic uncertainty and/or to pay down their debt, or whether they were forced to raise their savings due to tightened credit availability. The exact mechanisms behind this dynamic could have important implications for the future behavior of savings and consumption growth.

Figure 3. Saving Rates and Indebtedness in 2007
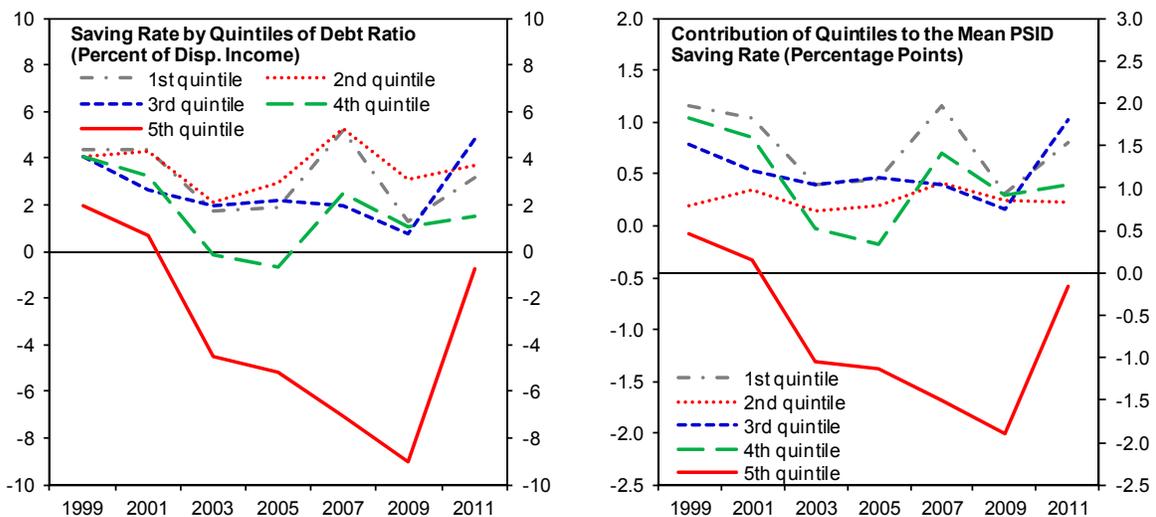
Sources: PSID; and Authors' estimates.

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households, and that a disproportionate share of Hispanics live in states that saw the largest boom-bust cycle in house prices.

F. Conclusion

23. **Households with lower income growth, higher dependence on housing, and high debt levels prior to the recession exhibited different saving behavior than other groups**. Households with low income growth over 1999-2007 experienced steep declines in their saving rate in the years leading up to the crisis and more volatile saving rates in the years surrounding the crisis, contributing significantly to the changes in the overall saving rate. Households that were relatively more dependent on housing in 1999-2007 had lower saving rates over the entire 1999-2011 period, and did not raise their saving rate until 2011. Households that had the highest debt-to-DI ratios in 2007 experienced a substantial decrease in their saving rates until 2009, and a sharp increase in 2011. Such households have made relatively limited progress in rebuilding their net worth through actively saving part of their incomes since the crisis. To the extent these households wish to improve their balance sheets going forward, they need to increase their saving rates from their current levels if the valuations of their assets do not rebound and/or their income growth does not pick up. At the same time, any increase in saving by the lower and middle-income households could potentially be offset by reduced savings by higher-income households, if the latter start saving less out of their incomes as financial asset prices recover further and macroeconomic uncertainty diminishes. Our results suggest that the share of saving and private consumption contributed by top-income versus middle-income households is an important area for future data collection efforts and empirical research.

Table 1. Summary of Income and Wealth Distribution (current dollars, unless otherwise noted)

		Quintile				5th		
	Source 1/	1st	2nd	3rd	4th	Total	80-90th percentile	90-100th percentile
Income								
Maximum of quintiles, 2006 market income 2/	CBO	13,187	26,460	42,848	67,392	328,271		
Percentage of households in CBO-defined quintiles 3/	PSID	13.6	23.0	24.4	21.6	17.3		
Maximum of quintiles, 2006 2/	PSID	16,914	28,485	42,019	63,150	328,953		
Mean value of income, based on 2007 quintiles	SCF	12,300	28,300	47,300	76,600	…	116,000	397,700
Mean value of income, adjusted to 2007	PSID	16,354	36,552	58,095	87,348	…	124,148	202,915
Stock holdings								
Percentage of families with direct holdings	SCF	5.5	7.8	14.0	23.2	…	30.5	47.5
Mean value in 2007 dollars	SCF	4,708	4,134	7,196	22,156	…	23,638	295,878
Percentage of families with direct holdings	PSID	2.3	6.1	9.4	18.3	…	26.7	35.1
Mean value in 2007 dollars	PSID	1,305	2,366	5,161	7,075	…	17,006	29,586
Housing wealth								
Percentage of families owning primary residence	SCF	41.4	55.2	69.3	83.9	…	92.6	94.3
Mean value in 2007 dollars	SCF	57,298	85,836	134,373	227,201	…	352,436	714,228
Percentage of families owning primary residence	PSID	28.3	46.5	64.7	81.7	…	88.8	85.9
Mean value in 2007 dollars	PSID	114,602	134,114	166,854	215,227	…	288,405	414,494
Mean housing equity in 2007 dollars	PSID	88,195	86,257	94,914	107,560	…	151,631	227,386
						…		
Mortgage debt								
Percentage of families with mortgage debt	SCF	14.9	29.5	50.5	69.7	…	80.8	76.4
Mean value in 2007 dollars	SCF	10,028	20,178	51,813	97,441	…	148,106	219,574
Percentage of families with mortgage debt	PSID	11.8	27.4	47.2	66.8	…	75.4	72.4
Mean value in 2007 dollars	PSID	26,407	47,858	71,940	107,667	…	136,774	187,108
Other debt								
Mean value in 2007 dollars	SCF	4,323	6,246	8,195	10,775	…	14,775	19,665
Mean value in 2007 dollars	PSID	4,155	6,192	7,815	10,794	…	10,726	11,641

Sources: Board of Governors of the Federal Reserve System; Congressional Budget Office; Institute for Social Research, Survey Research Center, University of Michigan; and Authors' estimates.

1/ CBO refers to the Congressional Budget Office; PSID refers to the Panel Survey of Income Dynamics; and SCF refers to the Survey of Consumer Finances.

2/ Censored at top 1 percent. The CBO values are adjusted to reflect current dollars in 2006.

3/ The family income is adjusted by the family size, similarly to the one reported by the CBO, by dividing the income by the square root of the family size.

Table 2. Means of PSID household income, savings, and net worth (current U.S. dollars, unless otherwise indicated)

	1999	2001	2003	2005	2007	2009	2011
Disposable income	48,542	52,514	52,199	61,465	66,454	67,800	65,663
Net worth	90,656	92,061	98,052	117,255	128,901	108,692	119,677
Housing equity	44,674	49,359	55,986	73,562	80,186	63,962	60,133
Total debt	34,706	39,214	45,279	49,626	57,094	62,437	60,941
Net active savings 1/	7,742	2,764	-148	-221	1,305	-1,082	3,003
Percent of DI: 3/							
Net Worth	186.8	175.3	187.8	190.8	194.0	160.3	182.3
Housing Equity	92.0	94.0	107.3	119.7	120.7	94.3	91.6
Total debt	71.5	74.7	86.7	80.7	85.9	92.1	92.8
Saving rate 2/	3.8	3.1	-0.1	-0.3	1.4	-0.8	4.0
Memo items:							
Disposable income per household (NIPA)	64,584	71,284	76,051	84,404	92,148	99,592	100,112
Net Worth per household (Flow of Funds) 4/	442,530	437,479	415,011	501,801	532,602	359,108	415,187
Growth of disposable income (percent, PSID)	…	8	-0.6	17.8	8.1	2.0	-3.2
Growth of disposable income (percent, NIPA)	…	10	7	18	9	8	1
Pension savings (mean, percent of disposable income, PSID) 5/	2.1	2.1	1.9	1.5	2.0	1.8	
NIPA saving rate for the household and nonprofit sector	4.8	3.3	4.2	4.0	2.8	5.8	6.7

Notes: The top and bottom 1 percent observations of disposable income and non-housing consumption are trimmed, for net active savings the top and bottom 50 observations are censured. Homeowners that move between surveys and households with missing home ownership information in the current and lagged survey are dropped. Wealth stocks and IRA greater than $ 500 thousands are censured. If home equity for a hosuehold is missing, other housing related wealth variables are ignored.

1/ Calculated as the sum of net active savings in housing, financial assets (cash and deposits, bonds, stocks, and IRAs, other debt), vehicles, other real estate and business.

2/ Calculated as mean net active savings as a percentage of mean disposable income.

3/ Computed as mean of variable to mean DI of the same year multiplied by 100.

4/ Excludes half of consumer durables (part of tangible assets), foreign bonds and deposits, and trade payables to enhance comparability with the PSID.

5/ Obtained from the PSID's Pensions Module. Pension savings are recorded for the survey year, unlike the net active savings in other instruments from the Wealth Module (for the preceding two calendar years from the 2001 surbey onwards, and for the preceding five years in the 1999 survey).

APPENDIX I. DISTRIBUTION OF HOUSEHOLDS ACROSS THE INCOME, HOUSING-DEPENDENCY, AND DEBT-TO-INCOME RATIO CATEGORIES

1.   Table A1 presents the bivariate frequency distributions of the households across the terciles used in the exercises shown in Figure 1 and Figure 2, and the quintiles shown in Figure 3.[1] There is a fair amount of variation between the types of households that fall into the various groups—that is, we don't find a strong correlation between the household characteristics we focus on. For instance, low income growth households as well as the groups with higher income growth are all quite uniformly distributed in terms of their housing-dependency—households with low income growth are not necessarily more dependent on housing. Low income growth households tend to have higher debt-to-DI ratios in 2007 than the households with higher income growth, which is not surprising given their lower mean saving rate. But the differences are modest; 24 percent of low-income growth households are in the top quintile of debt-to-income ratios, as compared to 17–19 percent of medium- and high-income growth households.

2.   Income levels are somewhat correlated with income growth and the dependency on housing, but not necessarily with debt levels. Not surprisingly, households with higher income growth over 1999–2007 tend also to have higher income levels over the same period. Housing tends to account for a larger share of assets among lower income households; more than half of low income households are in the top tercile of housing dependency, compared to about 20 percent for high-income households. The middle-income households account for a larger share of the top-quintile of debt-to-DI in 2007 compared with the higher- and, in particular, lower-income households, but the differences are not large.

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[1] The samples used in these exercises are not exactly the same, as the samples that sort households based on income growth and levels are restricted to households that are present with non-missing income data in each survey between 1999 and 2007, while the sample based on debt-to-income ratios is restricted to households present with non-missing debt and income data in 2007. The sample based on housing-dependency requires households to be present in 1999–2007 with non-missing house values and assets. We used the intersection of the samples for the bivariate frequency tabulations (the saving rates for these more restricted samples are similar to those shown in Figures 1–3).

Table A1. Distribution of the households across the income-growth, income-level, housing-dependency, and debt-to-income ratio groups

		Income growth (avg. 1999-2007)			Income Level (avg. 1999-2007)			Share of main home in total assets (avg. 1999-2007)			Debt-to-disposable income in 2007	
		Low	Middle	High	Low	Middle	High	Low	Middle	High	Bottom 80%	Top 20%
Income growth (avg. 1999-2007)	Low	0.33	0.00	0.00	0.14	0.12	0.07	0.12	0.09	0.11	0.25	0.08
	Middle	0.00	0.33	0.00	0.11	0.12	0.11	0.11	0.12	0.12	0.28	0.06
	High	0.00	0.00	0.33	0.09	0.10	0.15	0.10	0.12	0.11	0.27	0.06
Income Level (avg. 1999-2007)	Low				0.33	0.00	0.00	0.06	0.04	0.12	0.28	0.05
	Middle				0.00	0.33	0.00	0.12	0.12	0.13	0.25	0.08
	High				0.00	0.00	0.33	0.15	0.17	0.09	0.27	0.07
Share of main home in total assets (avg. 1999-2007)	Low							0.33	0.00	0.00	0.30	0.04
	Middle							0.00	0.33	0.00	0.24	0.10
	High							0.00	0.00	0.33	0.22	0.11
Debt-to-disposable income in 2007	Bottom 80%										0.80	0.00
	Top 20%										0.00	0.20

Source: Authors' calculations.

Notes: The table shows the share of households that fall into the categories denoted in a given row and column. The shares in each box add to 1. The sum of the shares across a row (column) gives the overall share of households in the group denoted by the row (column). For instance, in the sample underlying the second box from the left on the top row, 14 percent of the households have both low income levels and low income growth, while 33 percent have low income growth (14+12+7). The row and column totals are 33 percent in all boxes except the ones associated with housing-dependency, which is calculated only for households that own their main home. Homeownership differs across income groups and hence the housing-dependency related rows (columns) do not always add to 33 percent of households.

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II. THE RESIDENTIAL CONSTRUCTION SECTOR: WHEN WILL IT EMERGE FROM ITS RUBBLE?[1]

Despite some recent improvement, activity in the U.S. construction sector remains depressed four years after the start of the Great Recession, and the sector's share in GDP is at an all-time low. This paper shows that while the number of vacant homes in 2011 is well above its equilibrium level, the implied excess stock of houses is smaller because of the subdued formation of households since 2007. Using an empirical model and our forecasts on employment and financial conditions, we project household formation to steadily increase over the next few years. As a result, housing starts would increase gradually and return to their 1990s' average by 2016, with risks being tilted to the upside.

A. Introduction

1. **Instead of powering the economy as it has done after past recessions, the U.S. housing market has remained depressed since the Great Recession**. The ratio of construction to GDP, which reached 6.3 percent in Q4 2005, has continuously declined to reach 2.2 percent of GDP in Q1 2011. The anemic level of construction activity has also contributed to the current high unemployment rate, with implications for both consumption and real activity. The residential sector has seen some steady improvement since the second half of 2011, supported by an increase in multifamily housing starts. Nevertheless, the housing market remains very weak relative to historical levels.

2. **While excess construction during the pre-crisis boom year meant that an adjustment period was unavoidable, depressed household formation has also contributed to the weakness of construction activity**. Since 2007 household formation has been nearly at half of its average during the 1990s, reflecting high unemployment rates, a tightening of lending standards, and house price uncertainty.

3. **The outlook for construction activity depends on both the current number of excess vacant units and the strength of household formation going forward**. The higher the stock of excess vacant units, the longer it would take for construction to rebound, as the demand for housing will be largely met with the existing vacant stock. The speed of recovery in construction will also depend crucially on the future pace of demand, which in turn depends on the extent to which the number of households is currently below equilibrium.

4. **This paper uses a stock-flow model approach to shed light on the outlook for residential investment**. The paper proceeds in three steps. First, the paper assesses the extent to which the two components of the housing stock (occupied and vacant units) are above "equilibrium" levels. Second, the paper estimates an error-correction model (ECM) to forecast a path for household formation. Finally, these elements are put together to project a

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[1] Prepared by Jihad Dagher and Julien Reynaud with research assistance from David Reichsfeld.

path for housing starts. The paper also discusses other factors that could affect the recovery of construction activity in the United States, such as the decline in homeownership.

5.   **The paper suggests that construction activity is likely to recover slowly in the coming years, with housing starts returning to their 1990s levels only by 2016**. The stock of excess vacant units has declined since 2009 but remains elevated at around 3.7 million units. In contrast, the number of households is estimated to be currently below equilibrium. The ECM suggests that household formation could average slightly over 1.1 million over the next five years. Based on this prediction, housing starts will likely reach 1.35 million by 2016.

B.   A Stock-Flow Model and Estimates of Excess in Housing

6.   **The dynamics of the housing stock could be described using a stylized stock-flow model**. For simplicity, this first section will assume housing units to be homogenous, and therefore will not differentiate between the rental and for-sale markets (see Section E). The stock of existing housing (H_t) is the sum of occupied units (O_t), or equivalently the number of households, and vacant units (V_t): [2]

$$H_t = O_t + V_t \qquad\qquad (1)$$

The evolution of the stock of occupied units can be written as follows:

$$O_t = O_{t-1} + IN_t - OUT_t \qquad\qquad (2)$$

where IN_t is the number of newly occupied units, or *gross household formation*, and OUT_t the newly vacated units. The term $IN_t - OUT_t$ captures therefore the net increases in occupied units, or equivalently, *net household formation,* at time t. Similarly, we could describe the evolution of the stock of vacant units as follows:

$$V_t = V_{t-1} - (IN_t - OUT_t) + NEW_t - DEM_t \qquad\qquad (3)$$

where NEW_t is the number of newly built units, and DEM_t is the number of demolished units. These simple equations describe the evolution of the housing stock, and will be helpful in analyzing equilibrium levels and in making forecasts of future housing flows and stocks.

7.   **This section estimates equilibrium levels for the stocks of occupied and vacant units, in order to provide estimates of the overall excess in the stock of housing**. The excess vacancy ($V_t - V_t^*$) is a measure commonly used to gauge the potential for construction activity. However, this measure alone does not take into account the potential

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[2] The stock of vacant housing is defined as the sum of units that are for rent or sale, those that are held off the market for occasional use or other reasons, and units that are used on a seasonal basis.

demand for housing. In other words, excess vacancy could be due to depressed levels of occupancy (low household formation). Therefore, it is important to examine also the excess occupancy $(O_t - O_t^*)$. For a given excess vacancy $(V_t - V_t^*)$, one would expect a lower excess occupancy to be associated with a faster recovery in construction (more on this in section E). Hence, $(V_t - V_t^*)$ could be usefully supplemented with a measure of the overall excess in the housing stock:

$$H_t - H_t^* = (O_t - O_t^*) + (V_t - V_t^*) \qquad (4).$$

Equilibrium Occupancy Ratio

8.   **The number of occupied units has grown rapidly during the boom years, but is currently estimated to be below equilibrium**. The demand for housing boomed throughout the years 2003–06, when the number of households increased by around 4.5 million. In comparison, household formation averaged slightly more than 1 million a year during the 1990s. While some of this increase was due to demographic changes, the increase in the occupancy ratio (the ratio of the number of households to overall population) also reflects economic factors. There are two common methods to estimate the equilibrium occupancy ratio. The first method is based on its historical average, while the second computes the equilibrium occupancy by age group (commonly called "headship rate"). Thus the equilibrium based on headship rates takes into account changes in the composition of the population. Figure 1 shows that, according to both methods, the stock of occupied units was above its equilibrium level during the 2004–07 period, but it has fallen below equilibrium with the crisis and remains "excessively" low at end-2011.

Figure 1: Actual and Equilibrium Number of Occupied Units (millions)

Sources: Haver analytics; and Fund staff estimates.
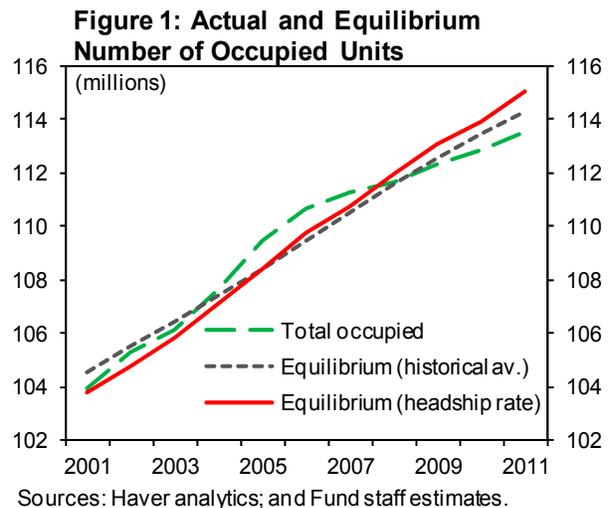
Equilibrium Vacancy Ratio

9.   **The increase in the stock of vacant units during the boom was even more dramatic than the increase in occupancy, and has left a legacy of a substantial excess.** Fueled by buoyant construction activity, the stock of vacant units grew strongly between 2001 and 2008, by around 650 thousand units a year, three times higher than the yearly average in the 1990s. Since 2010, the stock of vacant units has been on the decline, particularly the stock of for-sale/for-rent units and seasonal units. Units held-off of the market, on the other hand, have continued to increase between 2007 and 2010, likely owing to the decline in house prices (which could have led some sellers to wait for the recovery).

Currently, the stock of vacant homes stands at around 18.7 million.[3] The "vacancy ratio" (the ratio of the number of vacant units to the overall population) has increased rapidly between 1960s and the 1980s, likely due to structural demographic and economic changes. In the 1990s, however, it has hovered at around 5 percent before it started increasing rapidly as of 2001. Therefore, its value in 2000 (which is roughly equal to its average in the 1990s) is used as an estimate of the equilibrium level. Based on this estimate, the number of excess vacant units has peaked at around 4.1 million in 2009 but has since been declining, and it is estimated at around 3.7 million as of end-2011 (Figure 2).[4]

Figure 2: Actual and Equilibrium Number of Vacant Units

Sources: Haver analytics; and Fund staff estimates.
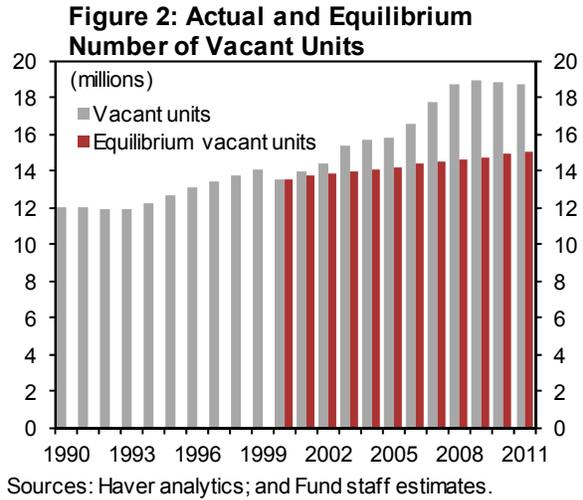
The Overall Excess Housing Stock

10. **Adding the excess stocks in occupied and vacant homes yields an overall excess housing stock of around 2.2 million as of end 2011**. As discussed earlier, excess vacant housing might be large due to depressed household formation. The excess in the *overall* housing stock also takes into account shortages or excesses in the stock of occupied units, and hence provide a better indication of the potential speed of recovery for construction activity.[5] Based on the estimated excess vacancy and excess occupancy, the total excess housing stock is estimated at around 2.2 million units as of end-2011 (Figure 3), down significantly from its peak in 2007.[6]

Figure 3: Overall Excess Inventory

Sources: Haver analytics; and Fund staff estimates.
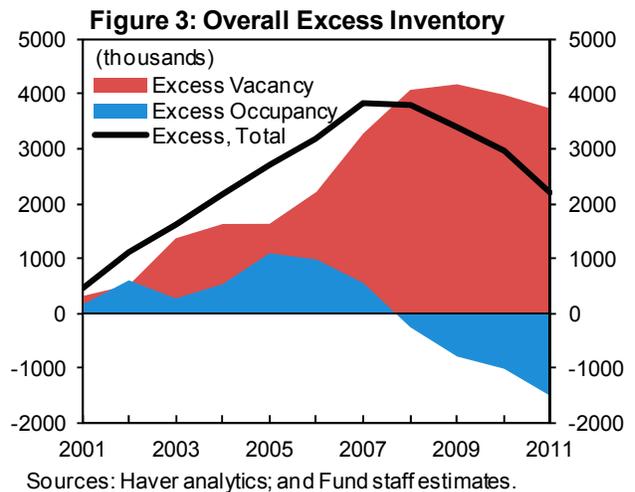
[3] Foreclosed homes that are vacant could enter the vacant stock in the various subcategories.

[4] A regression analysis in which the vacancy ratio is regressed on various demographic and economic factors yields similar results.

[5] As can be seen from the above equations, $H_t = H_{t-1} + NEW_t - DEM_t$.

[6] Henceforth, the measure of excess occupancy is based on the approach that takes into account compositional changes in the population (see paragraph 8).

Factoring in the Shadow Vacancy

11.   **The ongoing foreclosure crisis is expected to slow down the absorption of the excess stock of vacant houses**. While foreclosure rates have declined since their 2009 peak, they remain elevated and the stock of foreclosure inventory is near a record high. This implies that a share of currently occupied homes will continue to progress toward foreclosure and vacancy. While most households who experienced a foreclosure are likely to move to the rental market, some will instead relocate with their relatives. Therefore, even in a scenario where gross household formation recovers to levels in line with underlying demographic factors, net household formation is likely to be weakened by foreclosures. The shadow vacancy is currently estimated at around 4½ million.[7] The paper will henceforth assume that this shadow vacancy will subtract an annual ¼ million from household formation over the next two years.[8]

C. Recovery in Household Formation

12.   **This section estimates a model of household formation, both at the national and at state level.** A projection for household formation is a crucial input for any projection of housing starts. For that purpose, an empirical model is estimated to examine the determinants of household formation. A natural formulation is an error-correction model (ECM) in which the change in household formation is determined by its long term equilibrium (based on population) while short-term variations are explained by changes in a series of variables, such as employment growth. The benchmark specification is of the following form:

$$\Delta \ln \left(\frac{O_t}{P_t} \right) = \alpha + \beta \left\{ \ln \left(\frac{O_{t-1}}{P_{t-1}} \right) - K \right\} + \gamma \Delta \ln \left(\frac{O_{t-1}}{P_{t-1}} \right) + \theta Z_{t-1} + \varepsilon_t$$

where $\ln \left(\frac{O_t}{P_t} \right)$ is the logarithm of the occupancy ratio (the change in which approximates the difference between the growth rate of occupancy, O_t, and population, P_t), and K is a constant capturing the long term equilibrium of $\left(\frac{O_{t-1}}{P_{t-1}} \right)$.[9] Z_{t-1} are factors capturing other short-term

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[7] The stock of non-listed homes at serious risk of foreclosure is often referred to as the shadow inventory. What is relevant for the above calculations (and for construction prospects in general) is a variation on the shadow inventory measure that takes into account listed but non-vacated homes ("shadow vacancy"). This stock includes a share of (i) currently delinquent loans (at least 60 days past due), (ii) re-performing loans, (iii) underwater mortgages, and (iv) non-vacated homes that are in the process of foreclosure.

[8] In other words, of the 4½ million households that are likely to vacate their owner-occupied units, this paper assumes that ½ million will return to live with parents or relatives while the rest will move into rental units, thus not affecting the net change in vacant homes.

[9] This model assumes, for simplicity, that the occupancy ratio is constant at the equilibrium and thus assumes that the equilibrium level of O_t to be fully determined by the number of population. The constant K will be absorbed by the constant in the regression.

determinants of $\Delta \ln (\frac{O_t}{P_t})$, specifically, employment growth, the mortgage rate, and the Senior Loan Officer Opinion Survey (SLOOS) index of banks' mortgage lending standards. The equation is estimated using three different specifications: Model A is estimated at the national level without Z_{t-1}; Model B is estimated with the full specification at the national level; and Model C is estimated with the full specification at the state-level.[10] The results are shown in Table 1. The error-correction term has a negative and significant coefficient in all models. The lagged dependent variable is only significant in Model A and is thus not included in the other models.

Table 1: Determinants of Household Formation			
Dependent variable: $\Delta \ln(O\_t/P\_t)$			
	Model A	Model B	Model C
Lag $\Delta \ln(O\_t/P\_t)$	0.6921		
	[10.02]		
Lag $\ln(O\_t/P\_t)$	-0.0130	-0.3080	-0.6381
	[2.08]	[2.22]	[9.79]
Lag $\Delta \ln(employment)$		0.0759	0.0706
		[2.64]	[2.59]
FRB Sr Loan Survey		-0.0007	-0.0003
		[2.02]	[0.42]
Real mortgage rate		-0.2387	-0.4991
		[3.08]	[5.87]
Constant	-0.0056	-0.1253	-0.2588
	[1.93]	[2.12]	[9.00]
Model type	Long term equilibrium	Full model	Full model
Level	National	National	State
N	54	34	1038
R-squared	0.5916	0.5662	0.1687

The state-level model is estimated with state fixed effects. When Lag $\Delta \ln(O\_t/P\_t)$ is not included, it is not significant.

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[10] State-level fixed effects and cluster are used for the estimation of Model C.

13.   **Based on the estimation results, the growth rate of household formation is projected to pick up in the near term**. Projections for employment growth assume a continued recovery in employment growth (averaging 1.5 percent between 2012 and 2017), consistent with the U.S. projections in the IMF April 2012 WEO. We also assume a continued easing of lending standards (which declines by nearly 40 percent in 2017 from its peak in 2009), and a path for mortgage rates consistent with the consensus forecast.[11] Figure 4 shows the projection based on Model A for national data and Model C with state-level data. Model A, which explains household formation with its

Figure 4: Scenario for Household Formation

Sources: Haver analytics; and Fund staff estimates.

lag and the error-correction term only, predicts a smooth rebound over the two years before converging to the equilibrium level. The stronger rebound predicted by the state-level model (Model C) is due to the projected improvement in employment and easing of financial conditions, in addition to the pull-back effect from the error-correction term. Projected household formation averages around 1.2 million a year, between 2012 and 2017 in both models. These results do *not* take into account the shadow vacancy, which will be incorporated in the forecast in Section D.
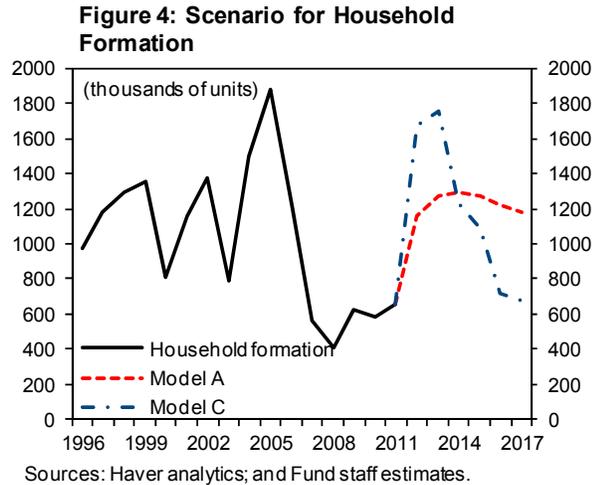
14.   **The projection of household formation is consistent with the evidence from previous housing boom-bust episodes at the state level.** While housing cycles have been modest at a national-level, 23 states have experienced significant real boom-bust episodes over the period 1977–2001.[12] Figure 5 shows that, on average across these episodes, household formation has rebounded strongly following years of depressed levels during the bust period. The rebound of household formation has lagged the recovery in employment, and has coincided with the trough in house prices. Our projections

Figure 5: Household Formation and Employment During Past Housing Cycles

(Trough is the year when house prices hit their bottom)

Sources: Haver analytics; CENSUS; BEA; and Fund staff estimates.

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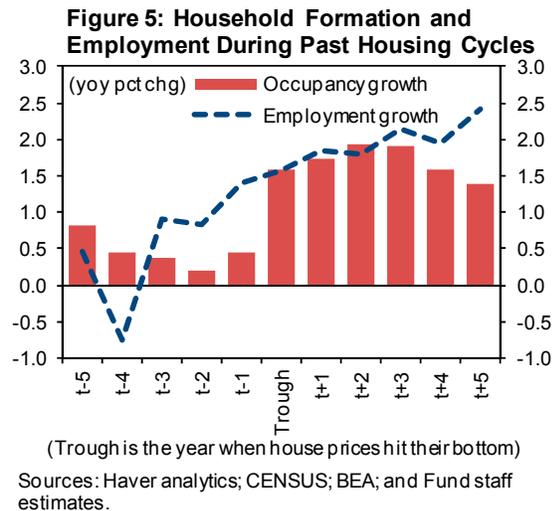
[11] Controlling for lagged population growth (including migration) does not change the main results.

[12] The annual FHFA house price index is used to identify the real housing cycle at the state level over the period 1977–2011. 23 episodes of boom-bust are identified, defined as peak-to-trough changes in real prices of at least 25 percent.

for household formation are qualitatively similar to these patterns, as they predict a rebound by 2013, a year in which house prices are expected to reach their trough and two years after the start of the recovery in employment.

D. Putting the Pieces Together

15. **This section projects housing starts over the next five years, using household formation from the ECM model as an input, and assuming that the excess vacancy will be eliminated in five years**. The forecast for household formation is taken from Model A, and does not take into account the impact of the units in the shadow vacancy stock. These units are therefore subtracted from the projection, leading to a lower level in household formation in 2012 and 2013. We then assume that the stock of vacancies will gradually return to their equilibrium level in 2017. Based on equation (3), having projected a path for household formation and assumed a path for the stock of vacancy units we can now project housing starts. In

Figure 6: Housing Starts Projections

Sources: Haver analytics; and Fund staff estimates.

particular, we obtain that they will return to their 1990s average as of 2016, at a pace of around 1.35 million units a year (Figure 6). If housing starts were to continue increasing at their current depressed pace of around 0.7 million a year, equation (3) implies that there will be a shortage of vacant units of around 1.2 million units in 2017.[13]
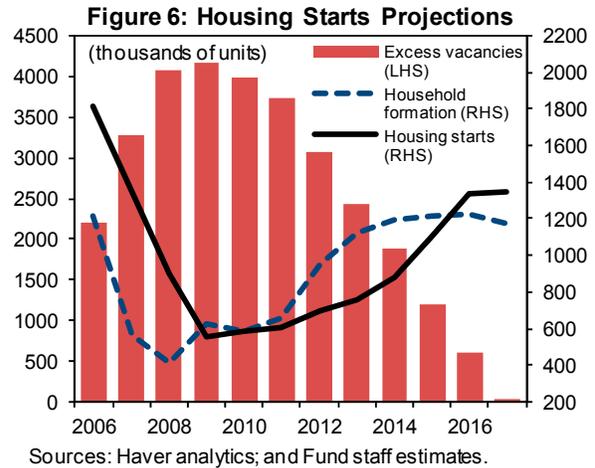
E. Other Considerations

Geographical Heterogeneity

16. **The excess vacancy rate varies significantly across states**. Figure 7 shows the distribution of excess vacancy at the state level (excess vacancy is computed as the difference between the vacancy rate as of 2010 and the average vacancy rate in the years 1990 and 2000).[14] The figure also shows the share of each state housing stock in the national stock, as well as the share of its excess vacancy in the total excess vacancy. A comparison of these two measures indicates whether the state contributes to the overall excess stock above what is implied by the size of its housing stock. For example, the contribution of Texas to the national excess supply is less than half its share in the national house stock, while the contributions of Florida, Ohio and Michigan exceed their share in the national stock.

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[13] A shortage in vacancies means that vacancies are below their equilibrium level.

[14] Given data limitation at the state-level, the most reliable sources of information are the decennial CENSUS.

Figure 7: The Heterogeneity of Excess Vacancy
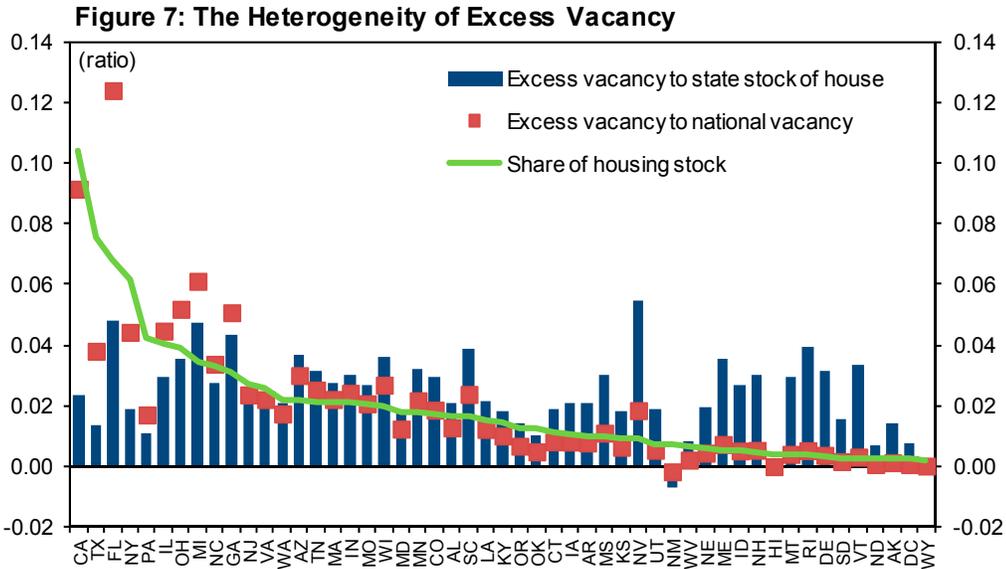
Sources: Haver analytics; CENSUS; BEA; and Fund staff estimates.

17.   **The heterogeneity in excess vacancy suggests that the recovery in construction activity could also vary widely across states**. If employment were to rebound in a relatively homogeneous way across states, the hardest-hit states would take much longer to clear their excess housing inventory, and construction would be driven mainly by the less affected states. Figure 9 shows a scatter of the excess vacancy in 2010 relative to the level in 1990, and the change in permits in 2011 as a percentage increase from their average 1990s level. There is a strong negative relation between these two variables, supporting the view that a high excess inventory is associated with lower construction levels.[15] Whether the heterogeneity in vacancy across states is a positive for aggregate construction (in comparison to what is implied by the benchmark national-level model) is uncertain. Conceptually, if the decreasing relation between excess vacancy and construction is convex (as anecdotally

Figure 8: Excess Vacancy and Construction
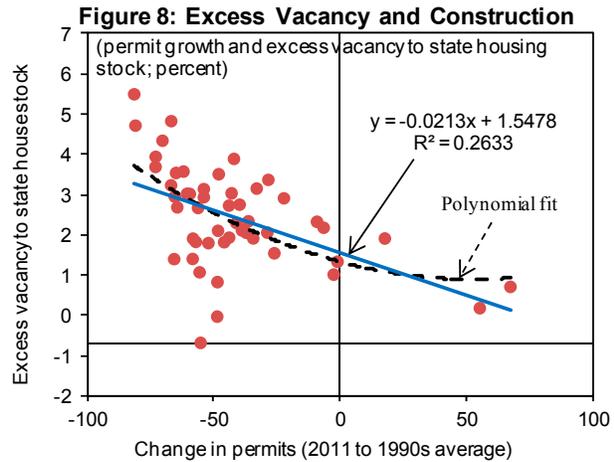
Sources: CENSUS; BEA; and Fund staff estimates.

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[15] A simple linear regression suggests that a reduction of one standard deviation in excess vacancy is associated with an increase by 15 percent in construction activity.

suggested by Figure 8) then this heterogenity would lead to a higher aggregate construction level than what is implied by the national average.[16]

Differentiating Between the Ownership and Rental Markets

18.   **The boom in homeownership that took place during the bubble period is currently unwinding, and this process is likely to continue for some time due to the large shadow inventory**. The homeownership rate has risen dramatically from the mid-90s to the mid-2000s, from 64 to 69 percent. Since 2005, homeownership has been on the decline, and is currently (as of Q1 2012) at 65.4 percent. This decline is the result of an adjustment to excess household formation in the ownership market. The transition of a large number of households from rental to ownership during the boom was fueled by excessive loosening of lending standards.[17] Many of these same households were later unable to make their mortgage payments and went back to a more affordable rental

Figure 9: Homeownership Rate
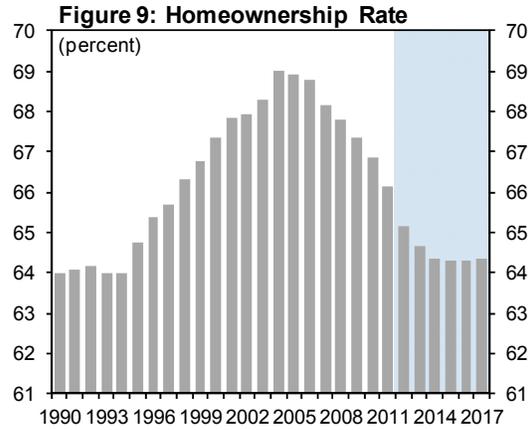
Sources: Haver analytics; and Fund staff estimates.

arrangement. The large shadow inventory indicates that the process is far from over, and is likely to continue for some time. Figure 9 shows a projection in which the homeownership rate settles to slightly above its 1990s average by 2017.

19.   **The increased demand for rental units is expected to be positive news for the construction sector given the segmentation in the real estate market**. Only a share of the units in the vacancy (and shadow vacancy) stock can be converted for the purpose of rental. Meanwhile, as more households are choosing rental over ownership, the vacancy rate of rental units is declining and rental prices are increasing. This has already led to an increase in multi-family housing starts and a continuation of this trend, together with a potential recovery in the

Figure 10: Projections for Housing Starts
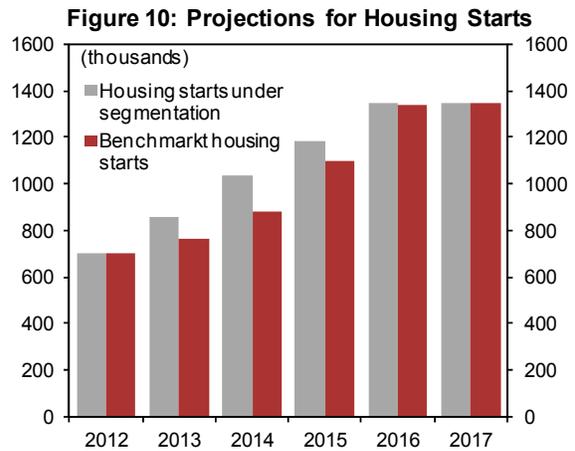
Sources: Haver analytics; and Fund staff estimates.

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[16] This is based on a highly stylized model. Assuming that construction c is a function of excess vacancy: $c = F(v)$ then if $v_A \neq v_B$, $\frac{F(v_A)+F(v_B)}{2} > F(\frac{v_A+v_B}{2})$ if $F(.)$ is strictly convex.

[17] This is consistent with the findings of the CBO, Background paper "The Outlook for Housing Starts, 2009 to 2012", November 2008.

labor market, is likely to further support construction in this sector. The model in section B is used to assess both the rental and the ownership markets, taking into account movements between the two. Figure 10 compares the implied path for housing starts under the model that takes into account the segmentation of the market with that implied by the benchmark model. Differentiating between the two markets leads to a higher projection of housing starts (by a cumulative 0.35 million between 2013 and 2015) than under the benchmark model.

F. Conclusion

20. **This paper estimated the excess stock of housing in the United States and assessed the determinants of household formation in order to shed light on the outlook for residential investment**. The main conclusion is that, conditional on a continued improvement in overall employment and lending conditions, household formation is likely to rebound over the next few years and absorb the remaining part of the already shrinking excess housing supply. A recovery path for household formation based on a state-level empirical model suggests steady, but moderate, gains in housing starts, which are likely to return to their mid-1990s level of around 1.35 million units by 2016. The increased demand for rental units could lead to higher levels of construction than what is predicted under the benchmark scenario. A better than expected improvement in employment is an upside risks, while setbacks to house prices and to the economic environment remain significant downside risks.

III. OUTPUT LOSSES FOLLOWING FINANCIAL CRISES—A SENSITIVITY ANALYSIS[1]

Almost four years after the crisis, it is still much debated whether U.S. output will return to its pre-crisis trend. We carry out a sensitivity analysis of the methodology used in Chapter 4 of the October 2009 WEO for assessing the output losses following financial crises. In particular, we check whether the main results of that chapter are robust to changes in the definition of the pre-crisis output trend, the events used for the analysis, and the window over which the output losses are being assessed. Using historical episodes, we also discuss the possibility of a full catch-up in the long run. Our results confirm the WEO 2009 empirical finding that financial crises are followed by significant output losses.

A. Introduction

1.   **The economic recovery from the Great Recession has been sluggish by most standards, in particular considering the depth of the output loss during the crisis**. Whether U.S. output will eventually return to its pre-recession trend or remain on a permanently lower trajectory has important implications for policymaking. A number of research papers have documented that output remains below its pre-recession trend following financial crises, including IMF (2009), Reinhart and Rogoff (2009), and Cerra and Saxena (2008). By contrast, Papell and Prodan (2011) find that GDP tends to return to its pre-crisis trend, but only after a long period (an average of nine years). To gain further insights into this question, this chapter carries out a sensitivity analysis of the methodology used in Chapter 4 of the 2009 World Economic Outlook (IMF, 2009).

2.   **We examine whether the choice of countries, trend definitions, and the length of the post-crisis window makes a difference to the assessment of output losses in the aftermath of financial crises**. A first question is whether estimates of long-lasting output losses in the WEO study are driven by the inclusion of severe crises in emerging market economies, some of which exhibited unusual growth patterns ahead of the crises. Another question is whether the estimated pre-crisis trends were too optimistic, as some of the financial crises in the WEO study were preceded by credit booms and asset price bubbles, giving the appearance of strong potential growth ahead of the crisis and a loss thereafter. Finally, whether the 7-year post-crisis window in the WEO study is long enough to capture an eventual return of output to its potential has been questioned—it is thought, for example, that after the Great Depression the US output eventually returned to pre-crisis trend, although this catch-up took over a decade.

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[1] Prepared by Geoffrey Keim, Oya Celasun, and Martin Sommer.

B. Analysis

Revised Data

3.   **First, we replicate the analysis of the WEO 2009 study using newly available data**. For the 86 banking crises identified in the sample,[2] we estimate linear trends using real GDP per capita from 10 years to 3 years before the crisis event. As in the WEO study, when the trend is negative, we re-calculate it over a longer period—from 20 years to 3 years prior to the crisis, and use the larger of the two estimated trends. These trends most frequently involve countries with multiple spells of financial crisis over short periods or other significant disruptions (no advanced economy episodes were adjusted using this technique). Once a trend has been estimated, it is extrapolated over the 7 years following the crisis. We then calculate differences between actual real per-capita output and the extrapolated trend over a 7-year window to produce time-series of output loss or gain. The data underlying these updated trend estimates are from the latest World Development Indicators database, and supplemented with country authorities' data and the WEO database where necessary. As such, it incorporates any revisions to historical data that may have occurred after the WEO study.

4.   **Qualitatively, our update confirms the results of the WEO study that financial crises are followed by permanent output losses**. However, our estimate of the average output losses is somewhat smaller than in the WEO. Under the new data, the mean output gap 7 years after the crisis is 8.6 percent of the pre-crisis trend, compared with the 12.5 percent identified by IMF (2009). Likewise, the median output loss comes to 6.3 percent of the pre-crisis trend using the updated dataset, compared to 10.1 percent in the WEO (2009) study (Figures 1 and 2).

Figure 1. Output Evolution after Banking Crises

Figure 2. Output Evolution after Banking Crises

Source: Fund staff estimates on data from the World Development Indicators, World Economic Outlook, and country sources.

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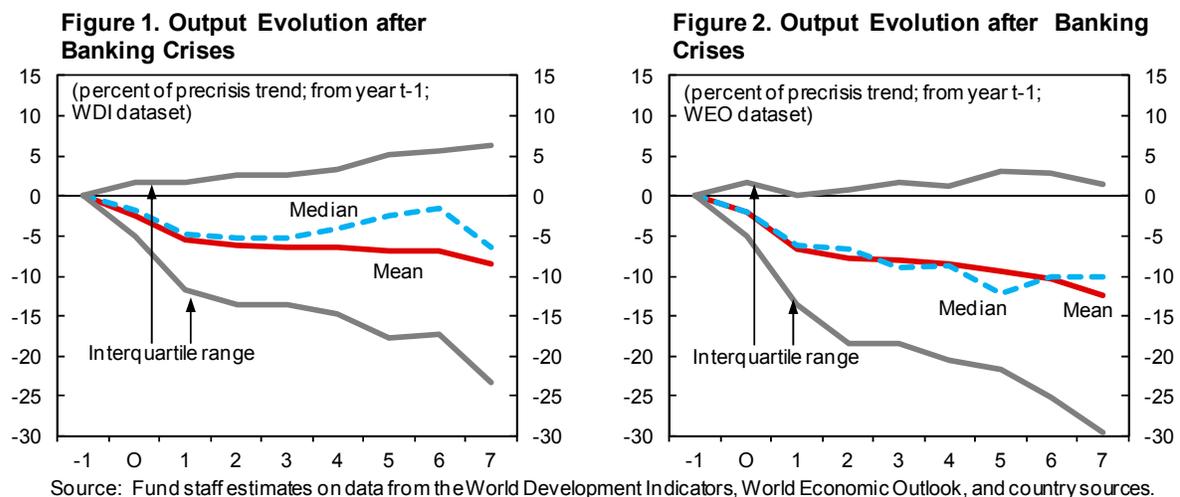
[2] As identified in Laeven and Valencia (2010). For a list of events, please refer to Table 1, columns (I) and (V).

Omitting Negative Trends

5. **These initial results could potentially be influenced by outliers**. In particular, there are 26 episodes in the sample for which we estimate a negative output trend over the 10-year window and therefore consider a revised trend based on a 20-year timeframe. All of these cases involve emerging economies, and many of these episodes involve countries with repeated contractions reflecting more than one spell of financial instability or other major disruptions over the estimation period. The direction of the potential bias introduced by the treatment of these events is ambiguous. On one hand, the replacement of a negative trend with a larger one yields more negative gaps between actual and trend output for any level of observed real GDP per capita, possibly bloating the estimated output

Figure 3. Output Evolution after Banking Crises

(percent of precrisis trend; from year t-1; WDI dataset; dropping trends <0)

Median

Mean

Interquartile range

Source: Fund staff estimates on data from the World Development Indicators, World Economic Outlook, and country sources.

losses. However, fitting curves over multiple steep contractions could produce trends—and output loss estimates—that are too weak. In any case, it may be inappropriate to include these cases in estimates of "typical" recoveries, since a proper upturn did not take place. Dropping these episodes yields estimated output losses that are larger: the average 7-year loss for the narrow set of 58 episodes[3] is 14.1 percent of pre-crisis trend, while the median stands at 10.9 percent (Figure 3).
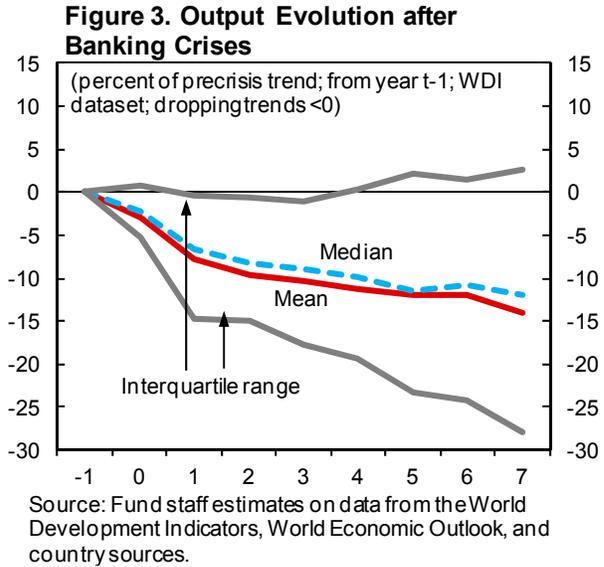
Limiting the Analysis to Advanced Economies

6. **The experiences of emerging and developing countries following banking crises may also not be informative for an advanced economy such as the United States**. As advanced economies typically have greater financial development and more space for forceful interventions during banking crises, the shape of the recovery there could be quite different than in emerging market economies. Dropping all events in emerging economies, we are left with 9 cases of banking crises in

Figure 4. Advanced Economies' Output after Banking Crises

(percent of precrisis trend; from year t-1; WDI dataset; advanced economies)

Median

Mean

Interquartile range

Source: Fund staff estimates on data from the World Development Indicators, World Economic Outlook, and country sources.

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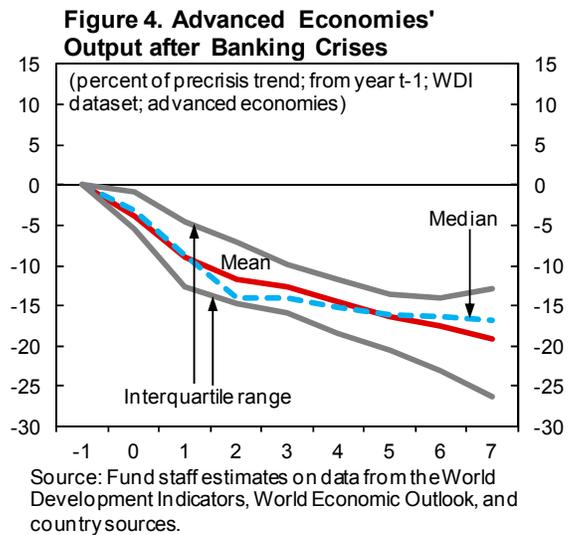
[3] Please refer to Table 1, columns (II) and (VI) for a list of these 58 events.

advanced economies starting in 1997 or earlier. These episodes include the U.S. Savings & Loan Crisis in the late 1980s, the Nordic crises in the early 1990s, and Japan in the mid-1990s, among others as shown in column (III) of Table 1. Results for these cases show even steeper 7-year output losses than in the full sample (Figure 4), averaging 19.2 percent of the pre-crisis trend; the median loss is 16.7 percent.

Using Different Trend Definitions and Using a Longer Post Recession Window

7.   **Finally, since the period over which these trends are estimated could influence the results, we replicate the analysis for advanced economies using six different methods for estimating trends, while extending the post recession window to 10 years**. We further augment the sample with some additional episodes that were not considered in the WEO 2009 study, as shown in column (IV) of Table 1. For the purposes of comparability, we retain the 10-year to 3-year trend. However, we add three alternative measures of trend, estimated from 20-years prior to the crisis to 1, 3, and 5 years before the onset. We also add two other estimates beginning 10-years before the crisis and extending to 1 and 5 years prior. The longer-trends and the ones ending 5 years prior to the event are intended to be less sensitive to excessively large growth associated with the bubbles that frequently grew in the years immediately preceding the crisis.

8.   **Under all estimates of trend, we find that in the aftermath of advanced economies' banking crises, per-capita output typically lags behind trend for at least 10 years after the crisis** (Figure 5). Estimated output losses vary depending on the definition of trend but remain large, with the average 10-year loss in a range of 15.6 percent to 24.4 percent. Moreover, in the 7 cases for which it is possible to observe real GDP per capita for 20-years following the onset of the crisis, in only three instances—after the 1991 Sweden and Norway crises and the 1973 United Kingdom crisis—does real per-capita output rise above any of the six trend definitions at any point along the 20-year horizon.

C. U.S. Episodes: The Great Depression, the S&L Crisis, and the Great Recession

9.   **Some analysts point to the behavior of output in aftermath of the Great Depression as evidence that U.S. output is likely to catch up to its pre-crisis path over time**. Papell and Prodan (2011) argue that the long-term effects of the Great Depression—the most severe crisis and recession in U.S. history—could provide an upper bound for the long term effects of the Great Recession, given the advances in economic policymaking. Other analysts have highlighted the stability of the long-term trend in U.S. per capita real GDP since the late 19th century, and the fact that output has always returned to the long-term trend in the aftermath of recessions. We examine the behavior of output in the aftermath of the Savings and Loan (S&L) crisis in the 1980s, and the Great Depression using various trend definitions. After the S&L output lagged slightly behind trend over the next decade (Figure 6). In the Great Depression, however, we find that output did surpass its pre-recession trend after 11–13 years, depending on the trend definition used (Figure 6).

However, the recovery of output coincided with a surge in federal spending as the United States entered the WWII (Figure 6). A strong rise in government spending is unlikely to be repeated at the current juncture; in fact, federal consumption and investment expenditures have been trending down since late 2010.

D. Conclusion

10. **The WEO 2009 finding of large output losses following banking crises is robust for advanced economies**. For the U.S., the prediction of a long-lasting deviation from the pre-crisis trend, as incorporated into staff's economic projections, underscores the importance of policies designed to limit medium-term output losses, in particular through targeted measures aimed at boosting housing and labor markets. The findings also imply that budget revenues may not fully recover to their pre-crisis trend, highlighting the need for a medium term fiscal consolidation plan that places the public debt ratio on a sustainable path.

Figure 5. Evolution of Advanced Economies' Output Following Financial Crises Under Alternate Trend Definitions

(percent of pre-crisis trend)
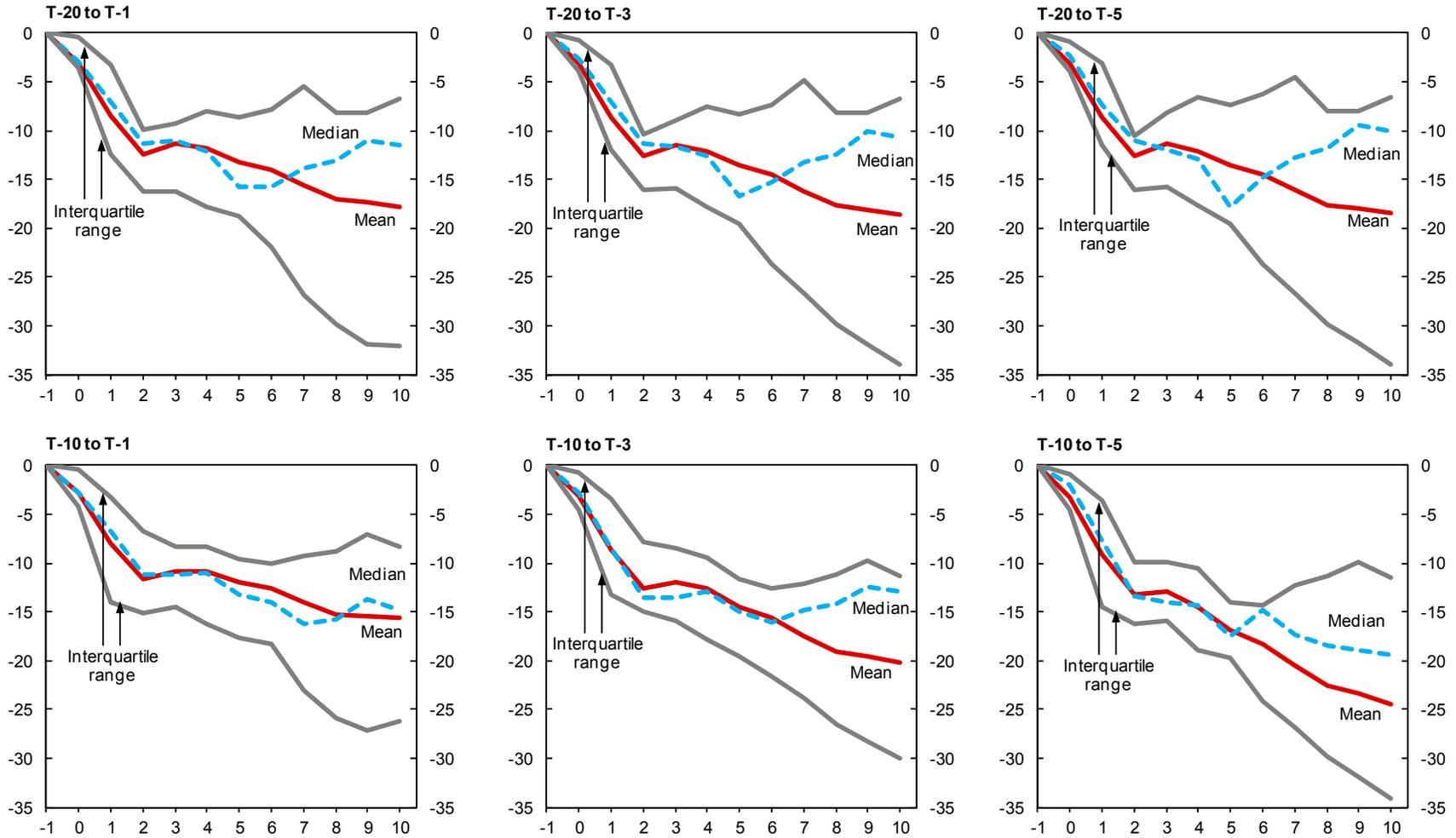
Source: Fund staff estimates.

Figure 6. The Great Depression , S&L Crisis, and the Great Recession

Output Losses following the S&L Crisis

(percent of pre-crisis trend)

T-20 to T-1

T-20 to T-3

T-20 to T-5

T-10 to T-1

T-10 to T-3

T-10 to T-5

Output Losses following the Great Depression

(percent of pre-crisis trend)

T-20 to T-3

T-20 to T-1

T-20 to T-5

T-10 to T-1

T-10 to T-3

T-10 to T-5

Real GDP and Government Spending in the Great Depression

(billions of chained 2005 dollars)

Real GDP

Real Gov't Consumption & Investment

Real GDP and Government Spending in the Current Cycle

(billions of chained 2005 dollars)

Real GDP (left)

Real Gov't Consumption & Investment (right)

Sources: Bureau of Economic Analysis; Historical Statistics of the United States; Haver Analytics and Fund staff estimates.

Table 1. Financial Crises in the Sample

Advanced economies:		(I) Base-line	(II) No trends < 0	(III) Adv. only	(IV) With extra cases
Finland	1991	x	x	x	x
Iceland	2008				x
Ireland	2008				x
Israel	1977	x	x	x	x
Japan	1997	x	x	x	x
Korea, Rep.	1997	x	x	x	x
Norway	1991	x	x	x	x
Spain	1977	x	x	x	x
Sweden	1991	x	x	x	x
United Kingdom	1973				x
	2007				x
United States	1988	x	x	x	x
	2007				x
Emerging and developing countries:					
Algeria	1990	x	x		
Argentina	1980	x	x		
	1989	x			
	1995	x			
	2001	x	x		
Bangladesh	1987	x	x		
Benin	1988	x	x		
Bolivia	1986	x			
	1994	x	x		
Brazil	1990	x	x		
	1994	x			
Burkina Faso	1990	x	x		
Burundi	1994	x	x		
Cameroon	1987	x	x		
	1995	x			
Central African Rep.	1976	x			
	1995	x			
Chad	1983	x			
	1992	x	x		
Chile	1976	x	x		
	1981	x			
Colombia	1982	x	x		
	1998	x	x		
Congo, Republic of	1992	x			
Costa Rica	1987	x			
	1994	x	x		
Côte d'Ivoire	1988	x			
Dominican Republic	2003	x	x		
Ecuador	1982	x	x		
	1998	x	x		
Egypt	1980	x			
El Salvador	1989	x			
Ghana	1982	x			

Emerging and developing countries (cont'd):		(V) Base-line	(VI) No trends < 0	(VII) Adv. only	(VIII) With extra cases
Guinea	1985	x	x		
	1993	x	x		
Guinea-Bissau	1995	x	x		
Haiti	1994	x			
India	1993	x	x		
Indonesia	1997	x	x		
Jamaica	1996	x	x		
Jordan	1989	x	x		
Kenya	1985	x	x		
	1992	x	x		
Madagascar	1988	x			
Malaysia	1997	x	x		
Mali	1987	x			
Mauritania	1984	x			
Mexico	1981	x	x		
	1994	x	x		
Morocco	1980	x	x		
Mozambique	1987	x			
Nepal	1988	x	x		
Nicaragua	1990	x			
	2000	x	x		
Niger	1983	x	x		
Nigeria	1991	x			
Panama	1988	x	x		
Paraguay	1995	x	x		
Peru	1983	x			
Philippines	1983	x	x		
	1997	x			
Senegal	1988	x			
Sierra Leone	1990	x			
Sri Lanka	1989	x	x		
Tanzania	1987	x			
Thailand	1983	x	x		
	1997	x	x		
Togo	1993	x			
Tunisia	1991	x	x		
Turkey	1982	x	x		
	2000	x	x		
Uganda	1994	x	x		
Uruguay	1981	x	x		
	2002	x	x		
Venezuela, Rep.	1994	x			
Zambia	1995	x			
Zimbabwe	1995	x	x		

Sources: Laven and Valencia (2009)

Notes: Columns I and V (baseline) refer to the episodes included in IMF (2009). Columns II and VI (no trends <0) exclude all countries for which we estimated a negative trend leading up to the crisis. Columns III and VII (advanced only) include only those episodes in WEO (2009) that are classified as advanced economies. Columns IV and VII (with extra cases) include several other cases added by the authors. These additional cases were chosen either to update the Laeven-Valencia dataset, which ended in 2007, or in the case of the United Kingdom, because it was included in Reinhart and Rogoff (2008).

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IV. Is Long-Term Unemployment Pushing Up Structural Unemployment?[1]

A. Introduction

1.   **The recession has left deep scars on the U.S. labor market**. The unemployment rate surged from 4.4 percent in May 2007 to 10 percent in October 2009 on the back of massive job destruction. Compared to the recoveries from previous postwar recessions, GDP growth and job creation have been particularly weak (the behavior of output per hour worked, on the other hand, has been similar to previous recoveries). Three years after the end of the recession, labor underutilization remains significant: the unemployment rate exceeds 8 percent, an additional 6 percent of the labor force is either marginally attached to the labor market or employed part-time for economic reasons, the employment-population ratio is barely above its post-recession trough, and the labor force participation rate has declined to its early 1980s levels (Figure 1).

2.   **A novel and worrisome feature of the post-recession U.S. labor market has been the emergence of a large and persistent pool of long-term unemployed**. During the postwar period, the U.S. labor market had never experienced large and persistent long-term unemployment (LTU), in contrast to several European countries.[2][3] This changed with the 2008–09 recession. The LTU rate increased from 0.7 percent in early 2007 to 4.5 percent in early 2010—almost double the previous historical peak—and has been unusually persistent since then (Figure 1).[4] In contrast, movements in short-term unemployment (STU) have been similar to those observed during previous U.S. labor market cycles. As a result, while in 2007 individuals unemployed for over one year accounted for 10 percent of overall U.S. unemployment, significantly below the OECD average of 30 percent, by 2011 their share in U.S. unemployment had surged to 31.3 (compared to a OECD average of 33.6 percent in 2011).

3.   **The increase in LTU has raised the possibility that the U.S. unemployment rate may remain higher than its level before the crisis, even as the economy recovers**. Indeed, the experience from some European countries, albeit with higher unemployment rates, in the 1980s suggests that the longer people remain out of work, the greater is the risk they will fall out of the workforce altogether (OECD, 2012). Long spells of unemployment carry the risk

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[1] Prepared by Eric Le Borgne.

[2] Unless otherwise specified, the use of "long-term unemployment, (LTU)" refers to persons unemployed for 27 weeks or more, as currently used in the United States (internationally, LTU is associated with a duration of 52 weeks or more).

[3] The LTU share was on a secular upward trend prior to the financial crisis but remained low for OECD countries. Both the rate and share of individuals unemployed for 52 weeks or more were low in the United States. compared to the OECD average (0.5 percent versus 1.7 percent, and 10 percent versus 29 percent, respectively, OECD, 2011).

[4] Three years into the recovery the LTU rate has receded by ¼ of its pre-recession surge against ⅔ for the STU.

that the long-term unemployed progressively lose their skills and attachment to the labor force. Thus, LTU could both raise the natural rate of unemployment and lower the labor force participation rate.

4.   **This paper investigates the extent to which the sharp increase in LTU in the U.S. may lead to an increase in the natural rate of unemployment**. The current weakness in the U.S. labor market is widely estimated to be mostly cyclical though a number of studies suggest that the natural rate of unemployment has increased since the recession (e.g., Elsby et al., 2011; Guichard and Rusticelli, 2011; Valletta and Kuang, 2012). To assess the risk that LTU could morph into a structural unemployment problem, the paper first analyses the characteristics of the long-term unemployed (Section B), and then assesses whether they are becoming less employable (Section C). The assessment of Section C draws both from estimates of the probabilities that the long-term unemployed individuals transition into a job, and from an assessment of whether labor markets find relatively more difficult to match supply and demand for the LTU. Section D concludes and provides policy recommendations.

5.   **The paper's main findings are twofold.** First, long-term unemployed are significantly less likely to find a job now than before the crisis, suggesting there is now a greater risk that they will lose skills and abandon the labor force altogether. Second, the loss of efficiency in the matching process between job vacancies and the unemployed workers is mainly a phenomenon regarding the long-term unemployed. Together, these results point to the possibility that the equilibrium rate of unemployment might be greater now than before the crisis.

B.   Who are the Long-Term Unemployed?

6.   **LTU is particularly high among less educated and younger individuals, and in lower-skill occupations, but broad-based across industries**:

- *Age*: LTU rates are higher among younger individuals—for example in 2011, the LTU rate for those aged 16–19 years was one and a half times larger than the rate for those 55 years and older. In terms of shares, the 16–19 year old group account for 5.3 percent of total LTU, while they represent only 3.7 percent of the labor force. This is in contrast with other age groups—the group of 35 to 44 year olds, for example, account for 18.9 percent of the LTU, while representing 21.3 percent of the labor force.

- *Education*: the level of education has a large negative impact on LTU incidence. Individuals without a high school diploma, for example, accounted for 15.6 percent of total LTU, but only 8.7 percent of the labor force in 2011. The gap between the LTU share and the labor force share decreases as education levels rise, and eventually reverses. Those with a college degree, for example, account for 19.5 percent of the LTU but 35.3 percent of the labor force (and 36.6 percent of total employment).

- *Occupation*: LTU rates are higher among lower-skill occupations, such as support services (e.g., cleaning and maintenance), construction, and production and transportation.[5] Similar findings arise in terms of shares: for example, production and transportation occupations account for about 12 percent of the labor force but about 50 percent of total LTU in 2011. While high-skill occupations workers face a lower LTU rate, once they become unemployed, they face similar length of unemployment spells as other occupations.

- *Industry*: LTU is broad-based across industries, as would be expected when unemployment is primarily due to a lack of aggregate demand. LTU rates are higher among unemployed individuals previously employed in some industries—e.g, leisure and hospitality, manufacturing and construction, professional and business services, information, trade, and transportation—but all the industries experienced a notable increase in their LTU rate since the recession. Industries that created jobs throughout the recession and recovery are have also experienced a large increase in their sectoral LTU rate (Figure 1).

C. Is there Evidence that the Long-Term Unemployed are Becoming Less Employable?

7. **To assess whether the long-term unemployed are becoming less employable, we estimate the probability that someone unemployed may find a job or drop out of the labor force from one month to the next**. To estimate these "transition probabilities," we use individual-level data from the *Current Population Survey* (CPS), a monthly survey of a sample of about 60,000 households that is representative of the entire civilian non-institutional population of the United States, with information on the labor force participation, employment, and unemployment status of individuals. As the CPS does not follow individuals over long periods of time, we track unemployed individuals from one month to the next. In March 2012, some 3,800 individuals that were unemployed in February 2012 were tracked. We estimate the monthly transition probabilities of the unemployed from 1994 to 2012. This is done using a multinomial logit model, where the dependent variable is the current labor force status of individuals that were unemployed in the previous month (that is, either unemployed, employed, or out of the labor force), and the explanatory variables are unemployment duration, age, gender, and education.[6]

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[5] LTU rates by a given occupation and industry are calculated as the ratio of the long-term unemployed workers who were previously employed in a given occupation or industry, divided by the sum of those that are currently employed in that occupation or industry and the unemployed workers that were previously employed in that occupation or industry.

[6] Unobserved heterogeneity (e.g., the quality of a worker not captured through education), could be an issue in analyzing the impact of unemployment duration on exit rates. The negative correlation between unemployment duration and the probability that a worker finds a job due to unobserved quality becomes more acute when the

8.   **We find evidence that longer unemployment spells are associated with a lower probability of finding a job and with a higher probability of leaving the labor force, but only up to a period surrounding the end of unemployment-insurance benefits**. In March 2012, the probability of finding a job was significantly lower for the long-term unemployed—about 5 percent, compared to about 17 percent for all other unemployed (Table 1, regression 1).[7] This finding is robust across the sample period and across demographic groups. However, we find some evidence of nonlinearities in the impact of unemployment duration on the probability of finding a job. Specifically, unemployment duration lowers the exit rate into employment only up to 83 weeks, after which further duration slightly improves the exit rate (Table 1, regression 4). This could reflect an optimal decision related to the proximity of the expiration of unemployment benefits the maximum duration of which was 99 weeks (as of March 2012).[8] We also find that the monthly probability of leaving the labor force is significantly higher for the long-term unemployed compared to all other unemployed (24 percent versus 21 percent—Table 1, regression 1). The probability of leaving the labor force increases by 7 percentage points once the duration of unemployment becomes larger than 99 weeks (Table 1, regression 5).

9.   **We also find that the probability that the LTU transition into employment has fallen markedly after 2009, and has remained depressed since then** (Figure 3). The impact of unemployment duration on the predicted transition probability into employment has been large, negative, and consistently statistically significant over the past two decades. On average over the sample period 1994–2007, this probability had been relatively stable at around 14 percentage points for the LTU (and about 13 percentage points lower than for the rest of the unemployed). However, this predicted probability has dropped to record lows with the 2007–09 recession, and has remained persistently low during the recovery: at 5 percent in 2012, it was two-thirds lower than during the 2001 recession. That the transition probability of the LTU into employment is still depressed three years after the end of the recession is a concern, as the longer the unemployed remain out of work, the more acute is their risk of de-skilling and dropping out of the labor force.[9] While the probability has not improved, we do not find evidence that it has trended down during the recovery—which would have been

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overall exit rate from unemployment is high (Machin and Manning, 1999). Thus, unobserved heterogeneity is less of a concern when unemployment is mostly cyclical, as is currently the case.

[7] Krueger and Mueller (2011) find similar results.

[8] That unemployment to employment exit rates increase as unemployment benefits near exhaustion has also been found in Aaronson et al. (2010) using older data.

[9] Should the LTU exit probability remain at its March 2012 level, it would take an additional 15 months for half (of the current LTU to find a job. By contrast, it would take 2.5 years for ¾ of the current LTU to find a job.

evidence of hysteresis effects: that is, evidence that longer-duration unemployment spell reduces the probability that an unemployed individual finds a job.[10]

10.   **Our results also show a weaker attachment to the labor force after the last recession, raising the risk that the recent decline in the participation rate may not fully reverse**. While secular trends were already pushing the labor force participation rate down since early 2000s, the period following the 2008-09 recession saw an unprecedented drop in participation rates. Almost half of the drop can be explained by older workers permanently abandoning the labor force while the other half is likely to be more cyclical, reflecting a mix of increased school enrollment and discouraged individuals (Figure 2).[11] Our results indicate that the probability that the unemployed leave the labor force has declined during the last recession and the early recovery phase (Figure 1). This could reflect the strong labor force attachment of those who became unemployed during the recession, as well as the large increase in extended unemployment benefits, which temporarily increases the unemployed workers' marginal attachment to the labor force. However, since 2011, the probability that the unemployed leave the labor force has risen. Part of that increase arises towards the end of the extended unemployment benefits period (99 weeks), which points to the risk of a further decline in participation rates going forward as a growing number of individuals exhaust their emergency unemployment benefits. The aggregate impact of LTU on the labor force participation rate remains limited in the near term as only 2½ percent of the unemployed were within 6 months of the 99 weeks threshold in March 2012.[12] By contrast, as of March 2012, about 40 percent of the unemployed had been out of a job for a duration between 27 and 72 weeks. There is a risk that the labor force participation rate declines if the unemployment-duration of these individuals becomes greater than 99 weeks.

11.   **Shifts in the Beveridge curves suggest rising mismatches in the labor market due to high and persistent long-term unemployment.** The Beveridge curve plots the relationship between the vacancy rate and the unemployment rate through a downward sloping curve. The closest is the curve to the origin, the more efficient is the labor market in matching demand and supply, as for a given vacancy rate there will be fewer unemployed individuals. In ranking models of unemployment the LTU are at the end of the hiring queue—or the least likely to get employed (Blanchard and Diamond, 1994; Lockwood, 1991). If so, in an environment with cyclically weak labor demand, the demand for LTU is significantly depressed. In such a situation, plotting the overall vacancy rate against the STU

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[10] Unemployment hysteresis embodies the idea that the equilibrium unemployment rate depends on the history of the actual unemployment rate (Blanchard and Summers, 1987).

[11] Aaronson et al. (2012) and Van Zandweghe (2012) find similar magnitudes of the impact of cyclical versus structural factors in the decline of the labor force participation rate since 2007.

[12] Rothstein (2011) also finds that the extended unemployment insurance significantly affects the probabilities that the long-term unemployed leave the labor force, but that the aggregate impact on labor force participation is minimal.

rate, instead of the total unemployment rate, can reveal whether the last recession has caused a loss of efficiency in labor markets which is related to the duration of unemployment. While the Beveridge curve has moved outward since the last recession (Box 1), the modified Beveridge curve (with STU instead of total unemployment) does not exhibit any shift: as the economy entered recession, the vacancy rate fell and the STU rate rose but when the economy started to recover both the vacancy and the STU rate retraced their earlier path (Figure 2). This suggests that the matching efficiency of the labor market seems to have been preserved after the 2007–09 recession for the STU, while mismatches have worsened for the LTU. The same results hold at a sectoral level,[13] in particular for manufacturing sector (Figure 3). Although it is too early to assess the extent to which these mismatches could become permanent, the more protracted is the recovery in the labor market, the more likely are these mismatches to become entrenched.

D. Conclusions and Policy Recommendations

12.   **Our analysis suggests that while high long-term unemployment has not yet morphed into a permanent structural problem, it does pose an upward risk to the structural rate of unemployment**. We have found that long-term unemployed are significantly less likely to find a job now than before the crisis, and that the loss in labor market matching efficiency observed since the recession is entirely due to a worsening of the labor matching of the long-term unemployed. Together, these results point to a risk that the structural rate of unemployment might be greater now than before the crisis.

13.   **Hence, forceful measures should be introduced that reduce long-term unemployment and address the risks associated with long spells of unemployment, namely skills erosion and a weaker attachment to the labor force**. These measures include policies to increase demand for the long-term unemployed in the short run (active labor market policies, ALMP). When appropriately designed, such policies have been shown to be effective in improving employment and earnings prospects of long-term unemployed workers (Card et al, 2010; Card and Levine, 2000; Heinrich et al., 2008; Hotz et al., 2006). In particular, as discussed in the Staff report, a significant increase in ALMP resources is warranted given the persistently large pool of long-term unemployed and the risk that, as duration lengthens, their skills and attachment to the workforce might erode. Indeed, in terms of resources per long-term unemployed, the United States spends relatively little on active labor market policies, both compared to other OECD countries, and relative to its own pre-recession levels.[14]

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[13] Sectoral Beveridge curves assume that the unemployed are searching for jobs in their previous industry of employment; such an assumption would likely not hold in sectors that experienced large and protracted shocks.

[14] For example, in the President's FY2013 budget proposal, the allocation to the Universal Displaced Worker Program can finance up to one million workers per year to receive job assistance and training. This can provide

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Box 1. The Beveridge Curve and Structural Unemployment

1.   **Evidence of a rightward shift in the Beveridge curve is consistent with an increase in the natural rate of unemployment**. From the literature on search and matching models, a rightward shift in the Beveridge curve indicates that the labor market matching efficiency has deteriorated. Several authors have pointed to this shift in the Beveridge curve since the 2007–09 recession (Figure 2) as evidence of a rising natural rate of unemployment (e.g., Barnichon et al., 2010; Daly et al., 2011; Weidner and Williams, 2011). Potential causes of the shift have been proposed: skills mismatch, geographic mismatch due to a post-housing bubble housing-lock effect, and extended unemployment insurance (CBO, 2012). Sahin et al. (2011) find that skills mismatch have indeed been a key factor behind the recent shift in the Beveridge curve but they also find that mismatches across sectors and occupations have started to decrease and are therefore likely to be cyclical. The housing-lock effect has been found to be small or insignificant in recent studies while the extended unemployment insurance impact is expected to fade as extended benefits are phased out, starting in 2012 (Elsby et al., 2011; CBO, 2012).

2.   **The Beveridge curve has shifted rightward during severe recessions, with the shift ranging from three years to being "permanent"**. Given the depth of the 2007–09 recession, it is instructive to analyze how the Beveridge curve behaved in previous severe recessions. Figure 2 reveals that in both the 1973 and the 1980 recessions a pronounced rightward shift of the Beveridge curve occurred. For the former the shift proved "permanent" while for the latter the curve eventually returned to its pre-recession locus but did so only three years after the unemployment peak of December 1982.

3.   **Drawing from Beveridge curve shifts during severe recessions, the current rightward shift is expected to persist for some time**. Using as benchmarks the Beveridge curve movements during severe recessions, one would conjecture that, even if the current shift of the Beveridge curve were to be temporary, it is likely to persist for a few more years since (1) the unemployment peak was reached "only" 2.5 years ago (in October 2009), (2) the 2007–09 recession was deeper than any of the previous postwar recessions, (3) the Beveridge curve is not showing signs of looping back and, if anything, is shifting further rightward[1]—which at this stage of the recovery can indicate that structural unemployment is creeping up— and, importantly, (4) in contrast to previous severe recessions/recoveries, the U.S labor market is currently confronted with a large pool of long-term unemployed individuals which might not be as rapidly employable as individuals with shorter unemployment spells (as detailed in the previous section, LTUs have been facing depressed hiring rates since 2009).

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1/ For a given vacancy rate, the gap between the unemployment rate during the recession and the recovery has slightly widened in early 2012 compared to the second half of 2011, from 2.4 to 2.2 percentage points, respectively.

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re-employment services to 19 percent of the long-term unemployed. The budget allocation in 2007 would have been able to provide these services to about 40 percent of the long-term unemployed.

Figure 1. The Emergence of a Long-Term Unemployment Problem?

The recovery from the 2007-09 receession is particullarly jobless...

U.S. total nonfarm employment compared to previous postwar recessions and recoveries (indexes; NBER business cycle peak = 100)

Range of previous postwar recessions and recoveries

Current episode, Dec. 2007 to Jan. 2012

Months
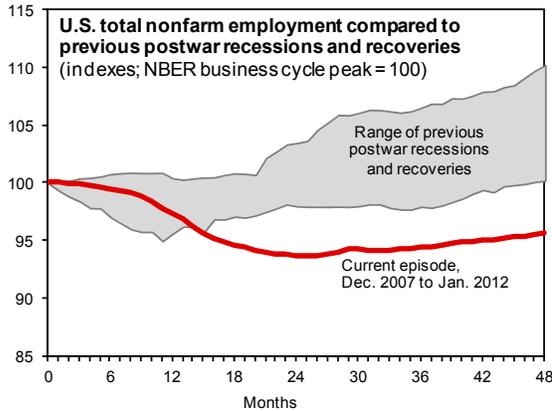
...while Labor productivity is in line with previous recoveries...

Nonfarm business labor productivity compared to postwar recessions and recoveries (real output per hour of all persons; indexes, NBER peak = 100)

Range of postwar recessions and recoveries

Current Episode

Quarters

..as is hours worked.

Average weekly hours in postwar recessions and recoveries (indexes, NBER peak = 100)

Range of postwar recessions and recoveries

Current Episode

Quarters
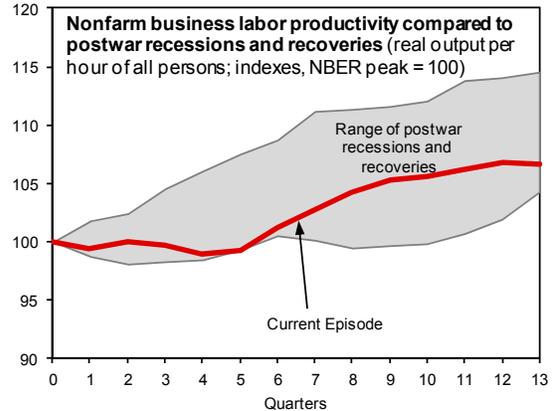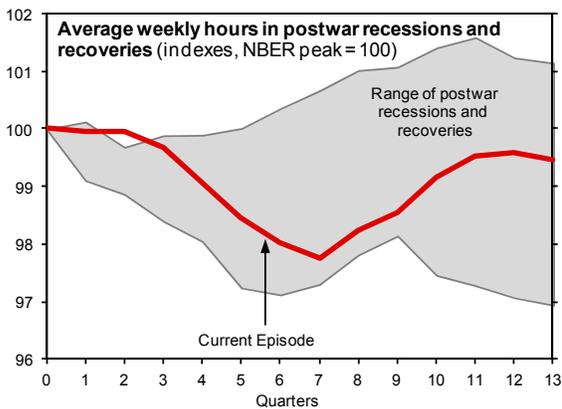
A large and persistent pool of long-term unemployed has emerged.

Weeks/%   Percent

Measures of unemployment duration

- - - Average {Mean} Duration of Unemployment (SA, Weeks)
— — Share of long-term unemployed (%)
—— Long-term unemployment rate (%, right)

1948   1956   1964   1972   1980   1988   1996   2004   2012
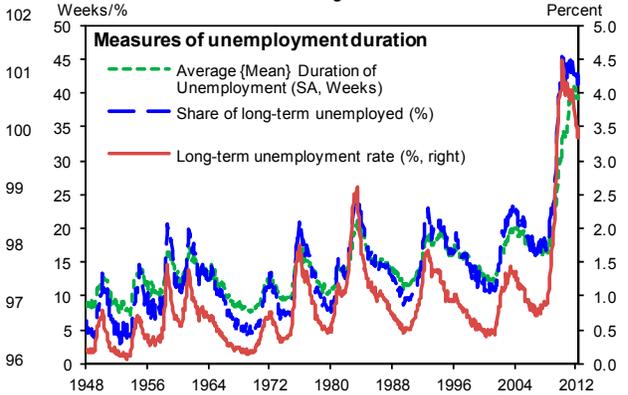
The long-term unemployment problem is broad-based across industries

Long-term Unemployed Workers, by Previous Industry of Employment, 2011

Other services Public admin   Nat res & mining
Ag. & related
Const-ruction
Leisure & hospitality
Manu-facturing
Educ & health
Wholesale & retail
Pro & bus services
Information   Transport & utilities
Finance

LTU

Long-term Unemployed (2011) Against Previous Industry's Employment (2007)

Wholesale & retail
Manufacturing
Construction
Leisure & hospitality
Education & health
Finance
Public administration

Employed (millions)

Sources: Bureau of Labor Statistics, JOLTS, staff calculations based on the CPS basic month, and Fund staff estimates.

Figure 2. A permanent Deterioration in Labor Force Participation and in Labor Market Efficiency?

A jobless recovery makes it difficult for the unemployed to regain work.
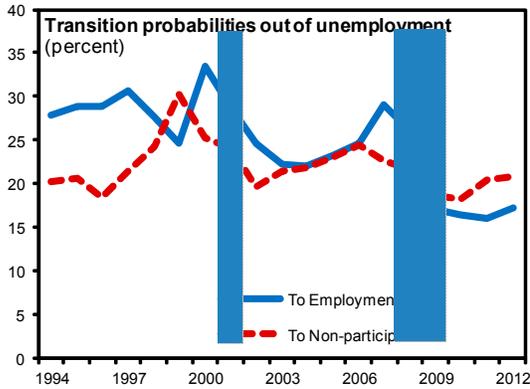
Long-term unemployment is an issue even in sectors with strong job creation.

Transition probabilities out of unemployment (percent)

To Employmen

To Non-particip

Long-term unemployment rate (2007) and net job creation rate(2003 to 2007)

LTU rate

Leisure and hospitality

Manufacturing

Construction

Agriculture

Education and health

Mining

Net job creation rate
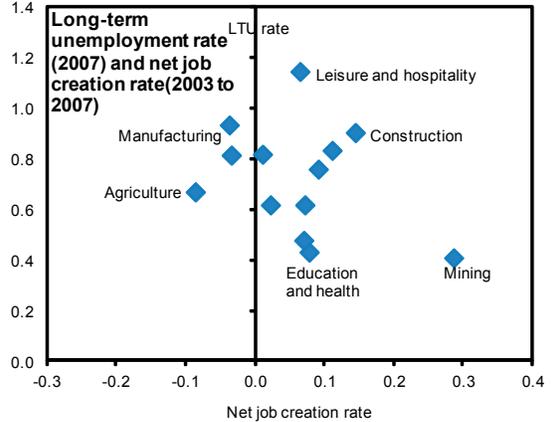
The 2007 - 09 recession led to a sharp and unprecedented drop in labor force participation

Labor force participation rate (percent)

Labor force participation rate, by gender (percent)

LFPR-Men (left)

LFPR-Women (right)
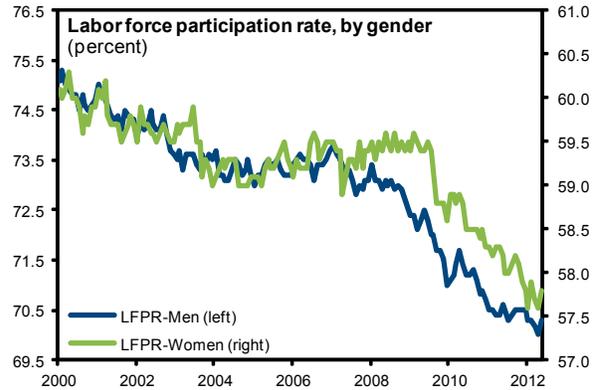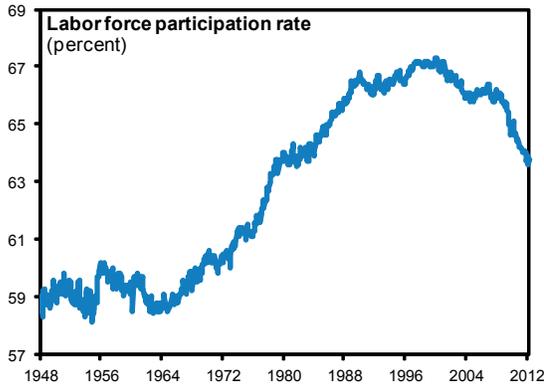
Most of the Drop in Labor Force Participation stems from Older Workers that Do Not Want a Job

	2007 Q4	2012 Q1	Change
	(Civilian population share, percent)		
In the labor force	66.0	63.8	-2.2
Not in the labor force	34.0	36.2	2.2
Do not want a job	32.0	33.6	1.6
16-24	5.8	6.3	0.5
25-54	8.3	8.4	0.1
55+	17.8	18.8	1.0
Want a job	2.0	2.5	0.5
16-24	0.7	0.8	0.1
25-54	0.9	1.1	0.2
55+	0.4	0.6	0.2

The job matching efficiency has seemingly worsened since the recession.

Job Openings Rate

Beveridge Curve (Tot. Private Nonfarm, SA)

May 2012

Recession: March 01-Nov 01

Expansion: Dec 01-Nov 07

Recession: Dec 07-June 09

Expansion: July 09-Present
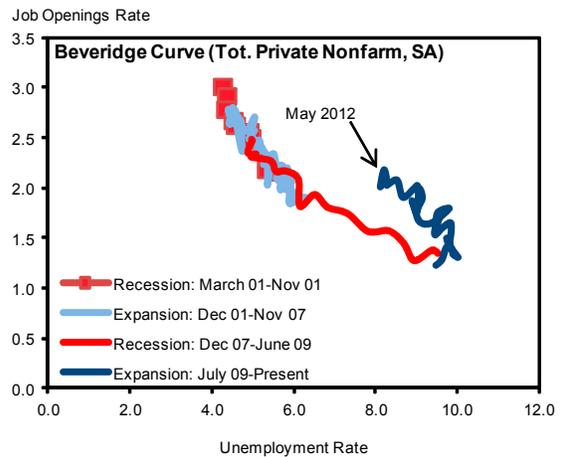
Unemployment Rate

Sources: Bureau of Labor Statistics, JOLTS, Haver Anallytics, and Fund staff estimates.

Figure 3. Job Matching and Finding Rates, by Duration of Unemployment

The deterioration in job matching efficiency does not stem from the short-term employed.

Previous recessions have been folllowed by a protracted, and at times permanent, worsening in labor market efficiency.
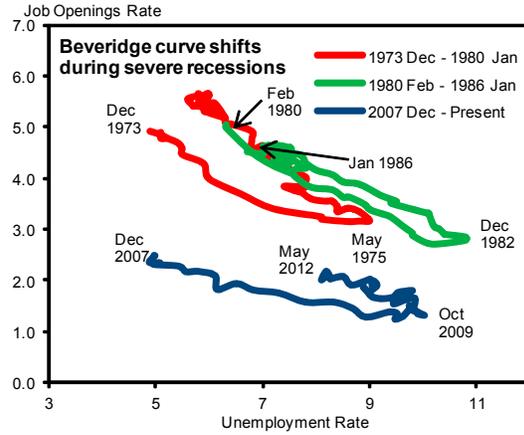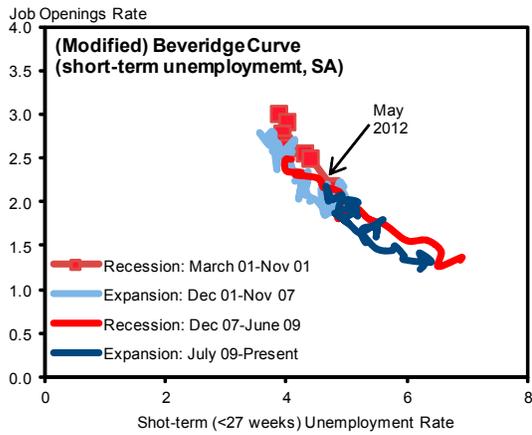
Sectoral Beveridge curve shifts are driven by the long-term unemployed.
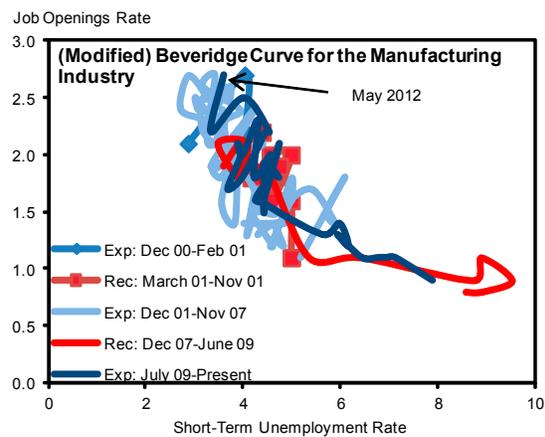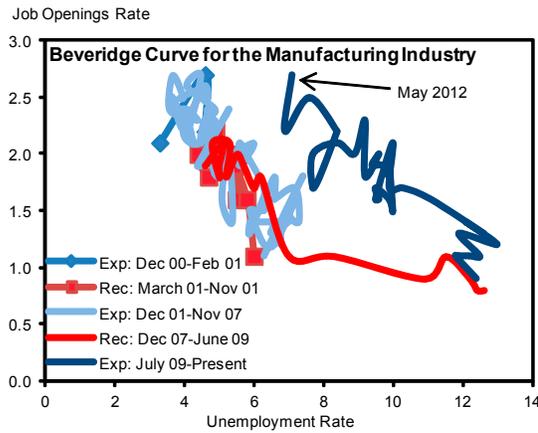
Exit rates from unemployment, by duration.
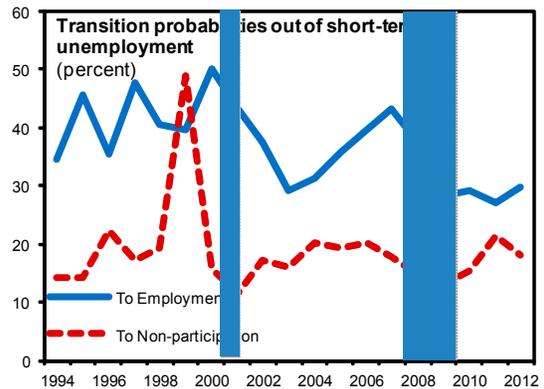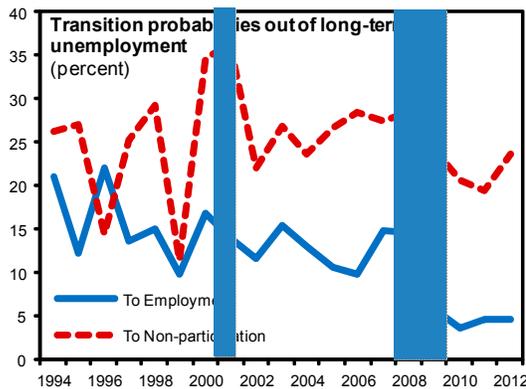
Sources: Bureau of Labor Statistics, JOLTS, Barichon (2010), staff calculations based on the CPS basic month.

Table 1. Labor Force Predicted Transitional Probabilities of Unemployed Workers and Marginal Effects 1/

|	Monthly transition probability of unemployed workers into:			Monthly transition probability of unemployed workers into:					Monthly transition probability of unemployed workers into:					Monthly transition probability of unemployed workers into:					Monthly transition probability of unemployed workers into:		
	U	E	NILF	U	E	NILF (retired)	NILF (disability)	NILF (other)	U	E	NILF (retired)	NILF (disability)	NILF (other)	U	E	NILF (retired)	NILF (disability)	NILF (other)	U	E	NILF
	(1)			(2)					(3)					(4)					(5)		
Predicted probability	0.618	0.173	0.209	0.630	0.176	0.001	0.009	0.183	0.633	0.173	0.001	0.009	0.184	0.633	0.172	0.001	0.009	0.184	0.619	0.173	0.209
Marginal effects																					
LTU (>27 weeks=1)	0.100 ***	-0.126 ***	0.027 *	0.103 ***	-0.128 ***	0.001	0.003	0.022 *											0.108 ***	-0.111 ***	0.003
U duration (weeks)									0.002 ***	-0.002 ***	0.00001 *	0.0001 **	0.0004 **	0.006 ***	-0.006 ***	-0.00002	0.0000002	-0.0003			
U duration squared (weeks)														-0.00004 ***	0.00004 ***	0.0000003	0.000001	0.00001			
UI dummy (0 if>99weeks)																			0.021	0.048 **	-0.069 ***
Age	0.002 ***	0.00004	-0.002 ***	0.003 ***	0.0003	0.0002 ***	0.0003 ***	-0.004 ***	0.003 ***	0.0004	0.0002 ***	0.0002 **	-0.004 ***	0.003 ***	0.0004	0.0002 ***	0.0002 **	-0.004 ***	0.002 ***	0.0001	-0.002 ***
Gender (M=1, F=2)	-0.029 *	-0.043 ***	0.072 ***	-0.029 *	-0.043 ***	0.0003	-0.001	0.073 ***	-0.029 *	-0.044 ***	0.0003	-0.001	0.073 ***	-0.032 **	-0.043 ***	0.0003	-0.001	0.075 ***	-0.030 *	-0.043 ***	0.073 ***
Education	0.006 **	0.001	-0.007 ***	0.006 *	0.001	0.00001	-0.001	-0.006 **	0.006 *	0.001	0.0000	-0.001	-0.006 **	0.007 **	0.001	0.0000	-0.001	-0.007 ***	0.007 **	0.001	-0.008 ***
Observations	3858			3858					3858					3858					3858		
Pseudo R2	0.0239			0.0489					0.0519					0.0576					0.0256		

1/ Multinomial logit model. *** refers to significant at the 1 percent level, ** refers to significant at the 5 percent level, and * refers to significant at the 10 percent level.
U: unemployed; E: employed; NILF: not in labor force

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V. RAISING REVENUES FROM U.S. PERSONAL INCOME TAX EXPENDITURES—OECD PERSPECTIVE[1]

A. Introduction

1.   **The United States needs to raise substantial revenue to reduce its debt and pay the costs of an aging society**. One efficient way to contribute to this would be to curtail various significant tax expenditures in the personal income tax (PIT). The PIT expenditures targeted for revenue-raising in this report were selected based on the following criteria: their reduction would raise substantial revenue;[2] improve economic efficiency; and increase the progressivity of the income tax. Many tax expenditures under the U.S. PIT, including mortgage interest, charitable contributions, and state and local taxes, take the form of itemized deductions, the incidence of which is generally regressive.[3]

2.   **The primary purpose of this note is to compare the U.S. treatment of these items with that commonly used in other industrial countries**. Where relevant history exists, the note describes the process of elimination of similar expenditure items in other countries.

B. Housing

Mortgage Interest Deduction

3.   **Many OECD countries deny a deduction for mortgage interest, including the UK, Canada and Australia**. These countries have similar rates of homeownership to the U.S. In contrast, the mortgage interest deduction constitutes the largest PIT tax expenditure in the U.S., other than that for health insurance. Some OECD countries give only limited mortgage interest deductions or use tax credits instead (for example, Denmark; France). A small group of countries (including the Czech Republic, Italy, and Austria) give a virtually unlimited deduction for mortgage interest (OECD, 2011).

4.   **Neutral taxation of owner-occupied housing would call for taxing its imputed rental value, but allowing a full mortgage interest deduction**. Taxing imputed rents has generally proved impracticable, however, although several countries have at one time or another done so. Belgium taxes imputed rent, but the value was last reviewed in 1975 and has been indexed to inflation since 1990, resulting in imputed rents generally below their market

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[1] Prepared by Jack Grigg and Thornton Matheson (Fiscal Affairs Department).

[2] The 5-year revenue cost of the tax expenditures considered in this paper (Table 1), estimated by OMB (2012), assume no behavioral changes. Further, because each tax expenditure is estimated in isolation holding all other features of the code constant, they cannot in general be aggregated.

[3] U.S. taxpayers have the option of either itemizing their income tax deductions or taking the standard deduction, which in 2012 varies between $5,950 and $11,900 for non-dependents. The standard deduction is set to correspond roughly to the average value of itemized deductions for moderate-income taxpayers. Taxpayer s with deductible expenses in excess of this amount, who tend to be higher-income individuals, have an incentive to itemize.

counterparts, especially for old houses. In the Netherlands, imputed income is calculated as a percentage (up to 0.55 percent) of a property's market value. Norway abolished its tax on imputed rents, based on property values, in 2005, and Sweden followed in 2007. While property values provide a readily observable basis for taxing imputed rents, they are likely to represent an imprecise measure of the returns to housing. An alternative is to use house prices and average price-to-rent ratios to estimate imputed rents, but this requires regular updating.[4] As imputed rent taxation is thus generally unattractive on administrative grounds, tax neutrality could be better approximated by phasing out mortgage interest deductibility.

Table 1. Value of U.S. PIT Tax Expenditures

Item	Cost 2013–2017 ($billions)
Housing	
Mortgage interest deduction	606
Imputed rents	337
Housing capital gains	171
Health Insurance	
Employer health insurance premiums	1,012
Deductible medical expenses	63
Health insurance premiums of self-employed	38
Health savings accounts	12
Capital Income	
401(k)	429
Reduced rate on capital gains	322
Employer plans	298
Step-up in basis at death	182
Life insurance savings	141
Self-employed plans	112
IRAs	100
Reduced rate on qualified dividends	22
Carried interest	14
State and Local Government	
S&L non-business taxes	295
S&L property taxes	141
Public purpose bonds	228
Private activity bonds	67
Charitable Contributions	
Other	239
Education	28
Health	27

Source: OMB (2012)

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[4] OECD (2012).

5.   **The U.S. excludes imputed rent and also allows generous mortgage interest deductibility, at a high cost in foregone tax revenues**. The U.S. tax code allows the deduction of mortgage interest from taxable income for both first and second homes on mortgages up to $1 million; interest payments on home equity loans of up to $100,000 can also be deducted.[5] The U.S. tax treatment provides amongst the most generous tax subsidy for owner-occupied housing of any OECD country (Figure 1).

Figure 1. Effective Average Tax Rates on Owner-Occupation (Personal Income Tax)
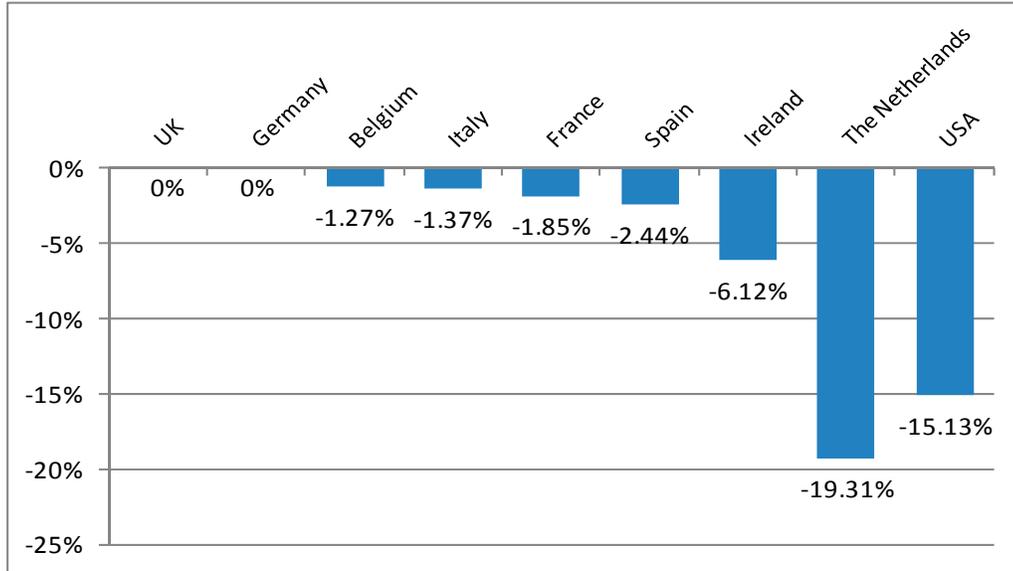
Assumptions: Mortgage fixed rate = 6%; Discount rate = 5%; House value = EUR 500,000; House inflation = 5%; Imputed rent =4%; 80% debt financing; Maximum PIT rate.
Source: Hemmelgarn, Nicodeme and Zangari (2011).

6.   **Tax breaks for housing create economy-wide distortions in the allocation of investment across sectors**. The marginal effective tax rate on housing investment in the U.S. is currently only 3½ percent, as compared to 25½ percent for business investment in equipment, structures, land and inventories (PERAB, 2010). This discourages investment in productive assets, to the detriment of long-run economic growth. It has also been argued that favorable tax treatment contributed to the housing bubble, although is the data shows only a weak correlation between changes in tax treatment and house prices over time and across states.[6]

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[5] The exclusion of imputed rent, net of mortgage interest and other housing-related costs is estimated to cost $337 billion in foregone revenues over five years. The mortgage interest deduction reduces income tax revenues by $606 billion. The tax expenditure from tax-favored treatment of housing equals the sum of these two revenue losses, as imputed rents are measured net of mortgage interest costs.

[6] The substantial increase in the capital gains tax exemption for housing in 1997 is sometimes cited as an inflection point for house prices. However, this was accompanied by elimination of rollover relief, whereby gains on disposal of a house were previously untaxed if the proceeds were reinvested in another property.

7.   **Although there is some weak evidence to support positive externalities from home ownership, the mortgage interest deduction is a poor tool to support this objective**. The tax treatment of housing changes behavior on two margins—the decision to own or rent and the decision of how much housing to consume – and some work suggests that mortgage interest deductibility influences the latter more than the former.[7] Better targeted policy instruments—for example, financial support to reduce down payments for poorer households—would provide a more cost-effective means of encouraging ownership.

8.   **Abolishing mortgage interest relief would also improve the progressivity of the income tax code**. The Urban-Brookings Tax Policy Center estimate that abolishing the mortgage interest deduction would lower after-tax income by 1 percent on average, by less than 0.1 percent for the bottom two income quintiles, and by 1.3 percent for the highest income quintile.[8] Higher-income taxpayers stand to lose relatively more due to their higher rate of home ownership, higher likelihood of claiming itemized deductions and higher marginal tax rates. Taxpayers in the top 1 percent of the income distribution would see a below-average decline in their post-tax income, as housing consumption rises less than proportionately with income at very high income levels. Older people tend to have smaller mortgages than younger people, suggesting that the impact of abolition would be distributed unevenly across age groups (Poterba and Sinai, 2008). However, to the extent that the mortgage interest deduction is capitalized in house prices, even homeowners with no mortgage would suffer a one-time drop in the value of their home. Beyond these temporary impacts, abolishing the interest deduction would favor equity over debt finance to purchase homes, to the detriment of younger people who tend to have higher loan-value ratios.[9]

9.   **The UK experience offers a lesson in how the mortgage interest deduction can be gradually phased out**. Until 1974, mortgage interest tax relief (MITR) in the UK was available for home loans of any size. In that year a ceiling of £25,000 was imposed. In 1983, this ceiling was increased to £30,000, below the rate of both general and house price inflation. From 1983 onwards, the ceiling remained constant, steadily reducing its real value. Beginning in 1991, this erosion of the real value of MITR was accelerated by restricting the tax rate at which relief could be claimed, to the basic 25 percent rate of tax in 1991, and then to 20 percent in 1994, 15 percent in 1995 and 10 percent in 1998. These ceilings on the size of loans and restrictions on the tax rate at which relief could be claimed chipped away at the value of the tax deduction, paving the way for its complete abolition in 2000 (IFS, 2006).

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[7] Glaeser and Shapiro (2002). There are negative aspects of ownership as well, notably that transactions costs limit mobility in response to labor market shocks.

[8] Urban-Brookings Tax Policy Center (2009).

[9] For a discussion of how the mortgage interest deduction equalizes the tax treatment of debt and equity finance to purchases homes, see Woodward and Weicher (1989).

Capital Gains

10.   **Some capital gains tax (CGT) exemption for primary residences is quite standard in OECD countries, but many countries restrict the exemption by some means**.[10] Many countries—like the US—impose caps or restrictions on the availability of the CGT exemption. Some countries (Australia, Netherlands, Germany) deny a CGT exemption if the home is also used for business purposes, while others (Austria, Finland, Germany, Iceland, Norway) specify a minimum period of occupation to qualify for the CGT exemption, presumably to discourage speculative activity. Denmark limits the physical size of properties that qualify for the exemption. Others provide tax deferral relief—as in the old US system— through rollover treatment, whereby capital gains taxation may be deferred if the proceeds are reinvested in housing (Spain, Sweden, as well as Iceland under certain conditions). Japan is the only OECD country to fully tax capital gains on primary residences applying rates that vary according to the value of gains and the duration of ownership.

11.   **Preferential capital gains tax treatment of housing distorts the asset allocation of investment**. Owner-occupied housing is purchased in part as a consumption good, but for many households their primary residence represents a vehicle for savings and investment. The favorable capital gains tax treatment of housing therefore creates a bias against investment in more productive financial and business assets. The US exemption is estimated to cost $171 billion in foregone revenues between 2013 and 2017.[11]

12.   **The U.S. should consider reducing the tax subsidies for owner-occupied housing provided by capital gains exemption, as well as the mortgage interest deduction**. A phased reduction in the CGT exempt amount for primary residences would improve the progressivity and neutrality of the tax system. At the same time, the size of the cap on mortgages that are eligible for tax deductibility of interest could be gradually reduced, alongside restrictions on the tax rate at which mortgage interest can be deducted, eventually resulting in the removal of all the existing tax subsidies for housing. The timing of these reforms requires careful consideration, however. The current tax subsidies are likely to be capitalized in housing prices, suggesting that reforms should be implemented gradually to minimize disruptions to the housing market.

C. State and Local Government

13.   **The federal government effectively subsidizes state and local governments through open-ended tax preferences—quite a unique policy among developed countries**. The U.S. offers several federal tax subsidies to state and local governments (SLGs) that

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[10] OECD (2006), based on tax treatment as of July 2004.

[11] OMB (2012). The US exemption is limited to $250,000 ($500,000 for joint filers), with some additional restrictions. The revenue cost may be higher during periods of more robust growth in housing prices.

lower the cost of raising sub-national revenues and carrying out investments, the largest of which are the deductibility of state and local taxes under the federal income tax and the exemption from federal income tax of the interest on municipal bonds. Typically, OECD governments support SLGs through direct grants and revenue sharing.[12] One benefit of direct spending as opposed to tax subsidies is that it is more transparent, since it must pass through the appropriations process.

Deduction of State and Local (S&L) Taxes

14.   **Taxpayers who itemize their deductions may deduct from their federal income taxes S&L residential and personal property taxes, as well as either S&L income tax or sales taxes**.[13] OMB estimates the current revenue loss from S&L property tax deductions at $141 billion and from other S&L non-business taxes at $295 billion. Because wealthier individuals are more likely to itemize, have larger S&L tax bills, and face higher marginal federal tax rates, the deductibility of S&L taxes is highly regressive (Table 2).

15.   **If local taxes are essentially a benefit tax, then they represent a charge for consumption of local public services and should not be deductible in the non-business context from federal income tax liability**. Property taxes in particular are usually viewed as payments for local services such as schools, infrastructure and public safety, so their deductibility is theoretically inappropriate. Sales taxes are a form of consumption tax, which should also not be deductible for income tax purposes. The argument for deductibility in order to avoid double taxation of income is not particularly well founded. Regardless, however, as states use income and sales tax revenues to pay for the same public goods, a deduction for income taxes only would distort state financing choices.[14]

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[12] The U.S. federal government supports S&L governments with matching and block grants, but revenue sharing was eliminated in 1986.

[13] The deductibility of S&L sales taxes was eliminated in 1986, but reintroduced in 2004 as an alternative to deduction of S&L income tax, a provision sought by the nine U.S. states—Alaska, Florida, Nevada, New Hampshire, South Dakota, Texas, Tennessee, Washington and Wyoming—that do not levy income taxes.

[14] Metcalf (2011) shows that deductibility does influence state choice of tax instruments, and that deductibility leads to higher levels of state spending. Therefore, the progressivity of eliminating the deduction for SLG taxes would be offset to some degree by the resulting reduction in progressive SLG spending programs.

Table 2. Effect of Eliminating Deductibility of All S&L Taxes

Decile	Mean Tax Increase ($)	Increase as Percentage of Cash Income	Percentage of Returns with Increase in Liability
1	0	0	0
2	1	0	1
3	6	0	4
4	15	0.1	8
5	40	0.1	16
6	100	0.3	28
7	215	0.5	40
8	371	0.6	54
9	746	0.9	70
10	3,238	1.3	86
Top decile			
90-95	1,536	1.3	85
95-99	2,639	1.4	89
Top 1	14,139	1.4	84

Source: Metcalf (2011)

Public Purpose S&L Bonds

16. **The exclusion of interest on "municipal" or S&L government public purpose bonds and qualified private activity bonds is an inefficient subsidy**. Interest on municipal bonds is not included in bondholders' federal income tax base; however, interest on private activity bonds—those issued by S&L governments on behalf of private interests—is taxable under the individual alternative minimum tax (AMT). Because of the income tax exclusion, investors are willing to accept a below-market return on them: An investor with a marginal PIT rate of t is willing to accept a tax-free yield of $(1-t)*r$, where r is the interest rate on taxable bonds. S&L governments are therefore able to borrow at below-market rates.

17. **Because the market-clearing investor in municipal bonds usually faces a PIT rate below the top rate, investors in the top bracket(s) receive more interest than they need to induce them to buy the bonds.** The revenue cost to the federal government of providing the interest rate subsidy exceeds the benefit to S&L local governments, with the difference captured by high-bracket investors. OMB (2012) estimates that the exclusion of interest on public purpose bonds costs $228 billion over 5 years, while the exclusion for private activity bonds costs another $67 billion. Because the benefit of holding tax-exempt

bonds vs. taxable bonds is increasing in an investor's marginal tax rate, the majority of tax-exempt bonds are held by investors in the top bracket.[15]

18.   **There are at least two options for reforming the inefficient subsidy for municipal debt.** One option is for the federal government to replace the interest exclusion on new municipal bonds with tax credits, as under the Qualified Zone Academy Bond program. The interest on tax credit bonds is taxable, but investors receive a tax credit for a certain percentage of the interest, giving each investor just sufficient subsidy to hold the bond, so the inefficiency of the interest exclusion is eliminated.[16] A second option is for interest to be fully taxed and the federal government to pay out a certain percentage of the face value of debt issued for qualifying purposes as grants, as under the Build America Bond program. CBO (2011b) estimates that replacing the S&L interest exclusion for new bond issues with a grant equal to 15 percent of their face value would save the federal government $143 billion over the next decade.

D. Health Insurance

19.   **The tax treatment of healthcare insurance varies across OECD countries, reflecting in part different models for the financing and provision of healthcare services.** Canada and Ireland provide generous tax incentives for insurance costs and do not levy income tax on health insurance contributions paid by employers. France allows employees to deduct insurance premiums paid by their employers from their taxable income, while Germany provides tax deductions for premiums and out-of-pocket expenses up to a limit. At the less generous end of the spectrum, Australia imposes a fringe benefit tax on employer-provided insurance, and the UK abolished tax deductions for private health costs in 1997.[17] However, even in countries with generous tax subsidies for private insurance, the fiscal cost tends to be lower as a percent of GDP than in the U.S., due to the larger role of public financing in health care provision. Estimates published by national governments show health-related tax expenditures cost 1.05 percent of GDP in the U.S. in 2008, compared to 0.27 percent in Canada, 0.29 percent in Korea, and zero in Germany, Spain, the Netherlands and the UK.[18]

20.   **The U.S. income tax code provides for the exclusion or deduction of health insurance premiums or expenses, and exempts medical benefits, at a high revenue cost.** Employer-provided health insurance premiums, as well as employee contributions in some cases, are excluded from taxable income. The tax code also allows for medical expenditures

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[15] See, for example, Feenberg and Poterba (1991).

[16] Joulfaian and Matheson (2010).

[17] OECD (2004)

[18] OECD (2010). Estimates relate to the year 2006 for Germany, Korea, the Netherlands and the UK, 2004 for Canada and 2008 for Spain.

beyond a certain share of adjusted gross income to be deducted from taxable income as itemized deductions and taxpayers with high-deductible health insurance policies can contribute to health savings accounts from pretax dollars. Finally, medical benefits provided by employers to their employees are not subject to income or payroll tax. These exclusions, deductions and exemptions for individuals are estimated to cost in excess of $1 trillion in foregone tax revenues between 2013 and 2017.[19]

21.   **The generous tax treatment of medical care expenses is estimated to be generally regressive.** This reflects in part low insurance coverage rates among those in the lowest income quintile. At the top of the income distribution, insurance coverage rates are very high and the average insurance benefit increases only slightly in line with income. As a result, the regressive impact stops well below the top 0.1 percent of the income distribution, with the latter gaining much less as a share of their after-tax income from tax subsidies for healthcare than those in the 80th to 90th percentiles.[20] Beginning in 2014, individuals with household income between 100 and 400 percent of the poverty line will be eligible for a premium tax credit when purchasing health insurance through insurance exchanges. This credit has the potential to improve the progressivity of the tax treatment of health insurance.

22.   **Tax subsidies for employer-sponsored health insurance encourage risk pooling among employees, but also provide an incentive for excessive consumption of healthcare services.** Out-of-pocket expenses will typically be less than the true cost of healthcare provision—with the difference paid by the insurer—the result is likely to be over-consumption of healthcare. The tax subsidy may be an important contributor to this moral hazard, which contributes to high levels of excess growth in healthcare costs in the U.S. relative to other advanced countries.[21]

23.   **Capping the tax exclusion for employer-sponsored health insurance would deliver significant fiscal revenues and contribute to health care cost control.** The high fiscal cost of tax subsidies for health insurance could be reduced by capping the dollar amount of the tax exclusion for employer-sponsored insurance, either on a per person or per tax return basis.[22] Such a cap would also reduce the incentive to over-consume health insurance, and if indexed to the consumer price index (which typically grows more slowly than medical costs) would lead to a declining tax subsidy over time. Alternatively, the current exclusion for employer-sponsored insurance could be replaced with a limited tax deduction.

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[19] OMB (2012).

[20] Urban-Brookings Tax Policy Center (2009).

[21] IMF (2010), "Macro-Fiscal Implications of Health Care Reform in Advanced and Emerging Economies"

[22] JCT (2008), "Expenditures for Health Care".

E. Charitable Contributions

24.   **Most OECD countries provide tax incentives for charitable giving, although sometimes in the form of a tax credit or with a cap.** The UK, Australia and Germany provide tax deductions for donations, the value of which depends on a taxpayer's marginal tax rate, while Canada, New Zealand and France provide tax credits (Table 3).[23] Denmark, New Zealand, Norway and, recently, the UK cap the amount of deductions or credits that can be claimed.

25.   **The U.S. income tax code includes an itemized deduction for charitable donations, subject to a ceiling, that looks generous by OECD standards.** Charitable contributions to qualified non-profit organizations are deductible from taxable income for taxpayers who itemize. The itemized deduction for cash donations is capped at 50 percent of a taxpayer's adjusted gross income,[24] and is estimated to cost $294 billion over the period 2013 to 2017.[25] In addition, bequest donations can be deducted from the total value of the estate before estate tax liability is calculated.

Table 3. Tax Incentives for Charitable Giving in Selected OECD Countries

Country	Tax deduction?	Marginal income tax rate	Tax credit	Deduction or credit capped?
Australia	X	39.5%		None
Canada			29%	75% of net income
France			66%	20% of taxable income
Germany	X	44.3%		None
Italy	X	49.2%		10% of total income or €70,000
Japan	X	30.7%		None
New Zealand			33.3%	None
United Kingdom	X	40.0%		£50,000 or 25% of taxable income
United States	X	39.4%		50 percent of adjusted gross income

Source: IBFD and OECD (2010), "Taxing Wages". Marginal income tax rate for single individual earning 167 percent of the average wage in 2010.

26.   **The public good nature of charitable giving provides a rationale for governments to subsidize donations, but it is important to ensure that the level of tax subsidy is cost effective.** Tax deductibility reduces the after-tax price of giving, providing a subsidy to charitable donations, and various estimates in the literature suggest that charitable giving responds positively to this price incentive.[26] However, these tax subsidies reduce the

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[23] Many countries, including the US, also provide preferential tax treatment for corporate donations to charities.

[24] The cap is set at 30 percent of adjusted gross income for donations for donated property that has appreciated in value since it was initially acquired.

[25] OMB (2012).

[26] The elasticity in the US is estimated to be around 0.5 (Andreoni 2001).

amount of funds available to government to make direct transfers to charitable causes. If, as the recent U.S. literature suggests, the price elasticity of charitable giving is less than one in absolute value, then the government could remove the tax incentive, make up the lost private donations from public funds and still realize a net budgetary saving.[27]

27.   **Setting a floor below which charitable donations would not be eligible for preferential tax treatment would reduce the revenue cost, with little impact on the size of donations.** A fixed dollar floor would allow taxpayers to claim an itemized deduction only for charitable donations in excess of a threshold—for example, CBO (2011) has analyzed a floor of $500 for individuals and $1,000 for joint filers. Most donations come from taxpayers who give more than this floor, and for these taxpayers the marginal tax incentive to give an extra $1 to charity would be unchanged. The CBO estimate that this reform could reduce the cost of the tax subsidy by around 14 percent, while reducing charitable donations by less than 1 percent (as the marginal tax incentive is eliminated only for small donations). This option appears reasonably progressive—tax subsidies for charitable donations would fall by 0.03 percent of adjusted gross income for individuals with income below $50,000, compared to a reduction of 0.12 percent for those earning between $100,000 and $200,000. Converting the deduction into a non-refundable tax credit, equal to a percentage of donations, would further reduce the revenue cost, and would eliminate the regressivity in the current tax treatment.

F.   Taxation of Capital Income

Capital Gains

28.   **A reduced tax rate on corporate capital gains and corporate dividends can be justified to alleviate corporate double taxation and the debt bias, but reduced tax rates on other forms of capital gains are not.** A reduced tax rate on (long-term) capital gains is usually justified on the grounds of alleviating "lock-in", as well as the tax on inflationary gains. Lock-in arises due to taxation of capital gains only on realization: when an asset is sold. The ideal alternative is accrual, or "mark-to-market" taxation, which would tax (or deduct) the change in value of assets each year. This is generally not done, since it requires regular asset valuation which is difficult in the case of illiquid assets, and could force liquidation of assets to pay the tax. Taxpayers therefore have an incentive to retain appreciated assets to avoid paying the tax. Although a low (or zero) capital gains tax reduces lock-in, it distorts investment decisions by causing investors to favor assets that generate capital gains rather than current income. An example of this is "corporate lock-in", in which corporations retain earnings rather than distribute them as dividends in order to appreciate their share prices. Other forms of financial arbitrage that convert current income into capital gains are also encouraged by the reduced rate.

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[27] This ignores the role of charitable giving in eliciting the preferences of donors.

29.   **OECD countries cite the tension between concerns about lock-in and financial arbitrage as critical in determining their choice of capital gains tax rates.** Those more concerned about lock-in as well as administrability tend to have low or zero capital gains rates, whereas those preoccupied with preventing arbitrage and base erosion tend to tax capital gains more comprehensively. Countries including the U.K., Canada, and Australia tax most capital gains; others including Germany, the Netherlands, and Mexico impose capital gains taxes only on selected items.

30.   **The U.S. applies a reduced tax rate on long-term capital gains and qualified dividends that costs $343 billion over 5 years**. The U.S. tax code has usually included a lower rate for "long-term" capital gains (currently defined as gains on assets held for at least one year). Unless the 2003 changes are extended, the rate on long-term capital gains will revert to 20 and 10 percent in 2013, and dividends will again be taxed as ordinary income.

31.   **A reduced tax rate on *corporate* capital gains and dividends alleviates the "double taxation of corporate income."** Given that corporate income is taxed at the 35 percent CIT rate (currently equivalent to the top PIT rate), taxing it again when distributed as dividends or capital gains imposes a heavier burden on corporate equity than other forms of investment—and a much heavier burden than that on corporate debt, since interest is deductible. A strong case can be made for policies that reduce this corporate "debt bias", such as corporate integration or an allowance for corporate equity (ACE).[28]

32.   **Most OECD countries therefore offer some sort of reduced tax rate on capital gains on corporate shares, which is often restricted by holding period or ownership share.**[29] Like the U.S., the U.K. offers a progressive schedule of reduced rates, while France and Japan offer a reduced flat rate. Australia and Canada tax only 50 percent of gains at ordinary PIT rates.[30] Germany exempts gains on shares held more than one year, while the Netherlands, New Zealand, Switzerland and Mexico exempts all gains on quoted shares.[31]

33.   **Non-corporate capital gains, however, do not represent income that has already been taxed.** "Carried interest" treatment taxes as capital gains some income earned by principals of pass-through entities that is arguably labor income and should therefore be

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[28] Corporate integration is alleviating the double taxation of corporate equity, either through imputation, in which shareholders receive a credit for taxes paid at the corporate level, or through a low or zero rate on dividends. An ACE would allow corporations a deduction for the cost of equity finance.

[29] "Controlling shares," defined in terms of the percentage of total equity held, are generally taxed at higher rates than portfolio shares.

[30] In Australia the exclusion is restricted to shares held for at least one year.

[31] Some dividends and capital gains arise from income that, due to corporate tax incentives, was never taxed at the corporate level. This can be addressed through integrating corporate and investor levels of tax. Australia, Canada, Mexico and New Zealand have imputation schemes. The E.U. has moved from imputation toward partial dividend exclusion, to equalize tax treatment of cross-border and domestic shareholdings.

subject to ordinary income tax rates.[32] Profits from livestock sales, which are mostly earned by agricultural businesses and should be ordinary income, are subject to reduced capital gains tax rates. Capital gains on primary residences are also often untaxed (see previous section). These sorts of capital gains should be taxed at ordinary PIT rates. As roughly one quarter of capital gains are on corporate shares (and stock mutual funds),[33] eliminating the reduced capital gains tax rate on other items would raise approximately $216 billion over five years.

34.   **The U.S. tax-free step-up in basis at death for appreciated assets is often criticized for exacerbating the lock-in effect.** Proponents of the policy justify it on the grounds that the estate tax has usually been levied at a much higher rate than the tax on long-term capital gains or even the top PIT rate. However, income and estate/inheritance taxes have different aims. OMB (2012) estimates that the step up in basis at death costs the federal government $182 billion over 5 years. OECD countries vary in their treatment of capital gains at death and their interaction with estate or inheritance taxes.[34] Several countries, including the U.K. and Mexico, give a step-up in basis at death. Alternatives to this regime include taxing accrued capital gains upon death - Canada, New Zealand and Denmark do this, with a subsequent step- up in basis; or carrying over the decedent's basis to his or her heirs, as occurs in Australia, Sweden and Spain.[35] Of these countries, the U.K., Spain and Denmark also levy an inheritance tax, but Mexico, Australia, New Zealand, Canada, and Sweden do not.

G.   Retirement Savings Accounts

35.   **The U.S. tax code provides for reduced taxation of several different long-term savings vehicles.** The largest of these income tax expenditures are: 401(k)-type plans, employer-provided retirement plans, self-employed plans, and individual retirement accounts (IRAs). With the exception of Roth IRAs, which account for roughly one quarter of the total IRA tax expenditure of $100 billion, contributions to these vehicles are out of pre-tax income (i.e., they are deductible); their investment earnings are untaxed; and withdrawals are fully taxed: so-called "EET" treatment.[36] For Roth IRAs, contributions are made out of taxable income, but earnings accumulate tax-free and withdrawals are also untaxed. Both of these regimes are equivalent to consumption tax treatment of investment. Under income tax

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[32]OMB (2012) estimates the cost of the carried interest policy at $8.2 billion over 5 years.

[33] Wilson and Liddell (2010).

[34] An inheritance tax applies to the amount received by each heir rather than the estate as a whole, and thus if it is progressive encourages wider distribution of an estate's assets.

[35] Yoo and De Serres (2004).

[36] EET = exempt, exempt, taxed.

treatment—the treatment applied to most other forms of saving—contributions are made out of after-tax income, earnings are taxed, and distributions are not taxed ("TTE").[37]

36. **Contributions to retirement savings vehicles are generally capped in each tax year.** Despite the contribution limits, however, the tax benefits of retirement savings provisions flow largely to wealthier individuals (Table 4).

Table 4. Effect of Eliminating PIT Tax Expenditures for Retirement Savings

Quintile	Reduction in After Tax Income (%)	Share of Total Tax Change (%)
1st	0	0
2nd	0.4	1.6
3rd	0.8	5.7
4th	1.4	13.1
5th	3.2	79.6
All	2.1	100
Top Quintile Breakdown: Percentiles		
80-90	3.2	20.2
90-95	4.2	18.5
95-99	4.1	25.1
Top 1%	2	15.7
Top 0.1%	1.4	4.7

Source: Toder et al. (2012)

37. **Like the U.S., the great majority of OECD countries offer tax-advantaged treatment for pension savings, mostly through EET regimes**.[38] The most common rationales for this policy are to provide an incentive for private retirement savings and compensate investors for restricted access to savings before retirement. Also like the U.S., many of the countries with EET regimes, such as France, Germany and Japan, tax distributions only partially. Nonetheless, a few countries do not privilege retirement savings under the income tax: Denmark, Italy and Sweden have ETT regimes, and New Zealand has a TTE regime (Yoo and De Serres, 2004).

38. **Although the U.S. regime is in accord with most international practice, the U.S. has an above-average cost of foregone revenue from its retirement savings regime**: around $0.27 per dollar of savings.[39] To reduce this cost, the cap on contributions out of pre-

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[37] Some social security income is also untaxed upon distribution, costing $150 billion over 5 years.

[38] Hungary, by contrast, has a TEE regime.

[39] Yoo and De Serres (2004) characterize the U.S. contribution limits as relatively generous compared with those of other developed countries.

tax income to all pension schemes could be unified and lowered to reduce tax benefits for upper-income taxpayers, whose saving decision would likely be little changed as a result. The CBO estimates that unifying and reducing the retirement plan contribution limit to $14,850 and the IRA contribution limit to $4,500 for all taxpayers would save $16 billion over the next 5 years and an additional $30 billion through 2021. A second option the CBO considers is bringing untaxed Social Security and railroad retirement benefits into the tax net, which would clearly be more regressive than lowering the contributions cap.

H. Conclusions

39.   **The favorable tax treatment of housing is costly in terms of foregone revenues and economic distortions and should be a high priority for gradual reform as the housing market regains strength.** The mortgage interest deduction and the capital gains exempt amount for first homes are estimated to cost $778 billion in foregone revenues between 2013 and 2017, making them among the most costly tax expenditures under the PIT. In addition to the high budgetary costs, these tax subsidies for housing distort savings and investment decisions and are highly regressive, while being poorly targeted at increasing home ownership rates.

40.   **Reforms to the tax treatment of state and local government and of employer-sponsored health insurance should also be given high priority.** The open-ended federal tax subsidies to state and local governments are estimated to cost $731 billion in foregone revenues between 2013 and 2017 and are uniquely generous by OECD standards. The tax exclusion of employer-sponsored health insurance premiums is estimated to cost $1,012 billion over the same period, and contributes to high rates of health care cost inflation. In both cases, replacing the current tax deductions with better-targeted tax credits would realize sizeable budgetary savings and reduce the regressivity of the current tax treatment.

41.   **Favorable capital gains tax treatment of gains at death and of long-term gains is moderately expensive, and should be considered a medium priority for reform.** The step-up in basis at death favors assets yielding capital gains over current income and exacerbates lock-in. The reduced tax rate on long-term capital gains can be justified for gains on corporate shares to alleviate double taxation. However, the U.S. should remove the favorable treatment of non-corporate gains where double taxation is not a valid concern. In total, these two tax expenditures cost an estimated $398 billion in foregone revenues over five years (excluding the reduced CGT rate on corporate gains).

42.   **Tightening the limits on tax deductibility of contributions to charities and retirement savings vehicles represent lower priority reforms.** The principle of providing favorable tax treatment for such contributions can be justified as correcting market failures, and is consistent with the tax treatment in other OECD countries. However, there is scope to curtail the budgetary cost of these tax expenditures to yield modest savings while retaining the tax incentive for contributions and improving their progressivity.

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VI. INTERNATIONAL SPILLOVERS FROM U.S. CORPORATE TAX REFORM[1]

A. Introduction

1.   **Policymakers and tax experts have entertained numerous proposals for U.S. corporate tax reform in recent years,** motivated by the concern that the current regime, which has the highest statutory corporate income tax (CIT) rate in the OECD at 39.2 percent,[2] undermines the competitiveness of U.S. businesses in acquiring foreign assets, and causes serious distortions. Despite its high rate, the U.S. CIT raises below-average revenue—in 2008, these were 1.7 percent of GDP vs. an OECD average of 2.8 percent—due to generous depreciation allowances and a large pass-through sector.[3] The high rate increases corporations' incentive to use debt finance and spurs multinational corporations to shift profits out of the U.S. through various tax-planning measures. The international tax regime of worldwide taxation plus deferral, which taxes U.S. corporations on the earnings of their foreign subsidiaries (less credits for foreign income taxes paid) but only when they are repatriated, is complex and administratively costly, deters earnings repatriation, encourages (re)incorporation abroad, and may put U.S. firms at a disadvantage in acquiring foreign assets. For primarily these reasons, the U.K. and Japan have moved from worldwide toward territorial taxation within the past decade.

2.   **A number of alternative proposals for corporate income tax reform have been floated, with a common direction toward lower rates and a broader base**. The bipartisan National Commission for Fiscal Responsibility and Reform (2010)—commonly called the "Simpson-Bowles commission"—calls for a reduction of the CIT rate to 28 percent, paid for by elimination of all major CIT expenditures. This plan was endorsed by the Business Roundtable organization of corporate CEOs. The House FY2013 Budget calls for a CIT rate cut to 25 percent, partially offset by base broadening, but does not specify which expenditures should be cut. Potential challenges from this type of reform include an impact on unincorporated U.S. businesses, which would lose deductions but not benefit from a lower corporate tax rate.[4]

3.   **Proposals to address the structure of the U.S. international tax regime differ**. The President's FY2013 budget proposal aims at tightening the existing deferral regime, proposing more stringent thin capitalization rules and disallowing deductions for interest expense related to foreign deferred income. The President's Framework for Business Tax

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[1] Prepared by Thornton Matheson and Jack Grigg (Fiscal Affairs Department).

[2] This includes the 35 percent federal rate plus average state-level CIT of about 6.5 percent which is deductible at the federal level: $35 + (1-0.35)*6.5 = 39.2$. The unweighted average combined central and subnational CIT rate among the non-US OECD countries is 25 percent. Source: www.stats.oecd.org.

[3] In the US, businesses currently have an incentive to use a pass-through structure, since the federal CIT and top marginal PIT rates are equal, and pass-throughs avoid double-taxation of dividends and capital gains. In countries where the CIT rate is below the top PIT rate, business owners may prefer the corporate form.

[4] See Section IIIB.

Reform unveiled in February 2012 further proposes a minimum tax on U.S.-owned foreign affiliates. In contrast, the National Commission on Fiscal Responsibility and Reform (2010) recommends moving to territoriality. The President's Economic Recovery Advisory Board (PERAB) in its 2010 "Volcker report" also considers this option favorably. A recent legislative proposal by House Ways and Means Committee Chairman Camp combines a shift to territoriality with an alternative minimum tax on foreign earnings.

4.   **The purpose of this paper is to consider the international spillover effects of U.S. CIT reform options:** rate cutting, base broadening, territoriality, and an international minimum tax. Particular attention is given to spillovers of these reforms to developing countries, which are generally more dependent on CIT revenue than OECD countries. Besides having important domestic implications, the U.S. reforms could have a variety of international spillovers. For example, the reforms could potentially put pressure on developing country CIT revenues by 1) reducing foreign direct investment (FDI), 2) out-shifting taxable income to the U.S., or 3) promoting increased tax competition; or in contrast, the U.S. reforms could enable foreign countries to adopt potentially more efficient forms of taxation, such as business cash flow taxes.

B.   Background and Context

Current U.S. CIT Regime

5.   **The U.S. corporate tax couples a high statutory tax rate—39.2 percent including average state and local corporate taxes—with a narrow base**. PERAB (2010) estimates that eliminating all major corporate tax expenditures would allow a 7-point cut in the federal CIT rate to 28 percent on a revenue-neutral basis. The largest three business tax expenditures are accelerated depreciation, which costs $507 billion over ten years, research and experimentation expensing ($152 billion), and the domestic production activities deduction ($127 billion). Although generous depreciation and research allowances stimulate new investment at the margin, a high overall rate burdens mature, profitable corporations. Moreover, a proliferation of tax expenditures distorts investment decisions and promotes extensive tax planning.

6.   **The U.S. worldwide tax system with deferral taxes corporations on their worldwide income, with a credit given for foreign income taxes (CIT and withholding taxes)**. However, active business earnings from controlled foreign corporations (CFCs), subsidiaries in which a U.S. parent holds at least a 10 percent share, are not taxed by the U.S. until repatriated as dividends. This gives companies an incentive to retain earnings in low-tax jurisdictions offshore.

7.   **In addition, U.S. accounting rules encourage retaining profits offshore**. Accounting Principles Board Opinion (APB) 23 provides that corporations that elect to retain profits offshore indefinitely do not have to recognize a deferred tax liability with regard to

those profits in their financial statements; reported earnings for firms that elect to do so will thus be higher, potentially boosting their share prices. Graham et al. (2011) show that APB 23 is an important factor encouraging corporate managers to avoid repatriation. Moreover, corporations are not required to hold their "unrepatriated" earnings offshore: Under IRC 956(c)(2), they may reinvest them in U.S. financial assets without being forced to recognize them as repatriated dividends for tax purposes.[5] A 2011 report by the Senate Permanent Subcommittee on Investigations finds that 27 of the largest U.S. corporations hold an average of 46 percent of their total $538 billion in undistributed foreign earnings in U.S. financial assets (cash, Treasury securities, and stocks) deposited with U.S. financial institutions.

8.   **A small share of U.S. MNE foreign earnings is repatriated in most years, and the stock of earnings held offshore is large**: about $1.7 trillion in 2011 at 1,113 U.S. corporations (Altshuler and Grubert, 2012; JP Morgan, 2012). MNEs may have non-fiscal motives for retaining earnings abroad—such as more profitable investment opportunities or hedging foreign currency risk—but current tax policy is widely regarded as a significant factor. Desai et al. (2001) find that the repatriation tax reduces dividend payments by about 13 percent. The results of the 2005 repatriation tax holiday, in which MNEs that repatriated earnings for selected purposes faced a residual U.S. tax of only 5.25 percent in that year, also suggest that tax is an important factor in deterring repatriation: MNEs temporarily boosted repatriations from an average of about $60 billion per year to $320 billion in 2005.

9.   **The U.S. worldwide regime gives rise to several common forms of tax planning that shifts profits from high-tax to low-tax jurisdictions**. Transfer pricing practices, in which an affiliate in a low (high) tax country underpays (overpays) for goods or services, are widespread and difficult to prevent where unique assets such as intellectual property are concerned. Real investment and profit shifting are linked insofar as companies with more capital invested outside the U.S. have a greater capacity to (credibly) shift profits offshore. The ability to shift profits also depends on the economic sector; those with more investment in intellectual property, such as pharmaceutical and information technology companies, have greater capacity to shift profits.

10.   **The 1997 "check-the-box" rules allow business entities to elect their form of business for U.S. tax purposes.** This provision facilitates widespread cross-border tax avoidance through the use of "hybrids": entities that are treated as different forms of business by different governments. Grubert (2012) estimates that check-the-box rules contributed 1–2 percentage points in the roughly 5 percent decline in U.S. MNE foreign effective tax rates

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[5] These funds may not be lent to or invested in the parent company without triggering repatriation tax; however, investment in the U.S. economy as a whole is not necessarily reduced due to unrepatriated earnings.

since 1997. Under a dividend exemption system, check-the-box would become largely irrelevant with respect to exempt foreign income.[6]

11.   **Deferral, cross-crediting and tax planning appear to be eroding the U.S. corporate tax base over time**. The foreign share of U.S. MNE earnings has been growing over time, from 37.1 percent in 1996 to 51.1 percent in 2004.[7] Low-tax jurisdictions show higher rates of profitability relative to sales and assets than higher-tax jurisdictions, including the U.S., suggesting that some profit is successfully shifted to low-tax jurisdictions. MNEs tend to owe very little U.S. tax on their foreign source income: GAO (2008) reports that in 2004 the effective U.S. tax rate on the foreign-source income of large U.S. MNEs was 4 percent, vs. 25.2 percent on their domestic earnings.

International Impact of U.S. Corporate Tax Reform

12.   **The U.S. accounts for the largest share of global FDI stocks (both inbound and outbound), suggesting that U.S. CIT changes could have important spillover effects for the rest of the world**. In 2010, the U.S. accounted for 18 percent of the global stock of inward FDI, compared to 9 percent for the second largest FDI recipient (China, including Hong Kong S.A.R.); and 24 percent of the global stock of outward FDI, compared to 8 percent for the second largest FDI source (the United Kingdom). While the discussion and analysis of U.S. corporate tax reform tend naturally to focus on the impacts on the U.S. economy, the leading role of the U.S. in cross-border investment activity implies that U.S. CIT reforms could generate significant spillovers for other countries. U.S. CIT changes can affect other countries through multiple channels, requiring that the spillover impacts be evaluated against several criteria. In the remainder of this note, we analyze the international spillovers from various U.S. CIT reform proposals against the following criteria:

- *Impact on real investment activity*: Changes in the U.S. tax treatment of corporate profits can potentially alter the decision of U.S.-based C-corporations between domestic and overseas investment. The attractiveness of the U.S. as an investment location for foreign firms, compared to investment in their home or other foreign countries, may also be affected. While the literature tends to conclude that non-tax factors are important determinants of multinational firms' location decisions, the elasticity with respect to tax rates is typically found to be reasonably large.[8] FDI is thought to embody knowledge and

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[6] Not all hybrids, which can also take the form of hybrid securities, depend on check-the-box. For example, European companies can issue contingent convertibles that are treated as debt in their home countries, generating interest deductions, but are regarded as equity in the US, qualifying for the lower dividend tax rate. Repealing check-the-box would thus eliminate some but not all hybrid tax planning.

[7] These data in Grubert (2012) are based on corporate tax returns. Grubert notes that BEA data based on corporate financial statements suggest that this trend has continued since 2004.

[8] Based on meta-analysis of other studies, De Mooij and Ederveen (2008) estimate that the semi-elasticity of discrete investment location decisions with respect to the average effective tax rate (AETR) is -0.65. This elasticity is the percentage change in investment in response to a one percentage point increase in the AETR.

technology that are sources of beneficial spillovers to the host economy, implying that any changes in FDI patterns can have important effects on the economic performance and welfare of the rest of the world.

- ***Impact on profit shifting:*** Profit shifting to low tax jurisdictions represents a different margin of behavioral response to cross-country tax differences than the location decision for real investment activity, although the opportunity to engage in profit-shifting behavior may increase the attractiveness of locating real activity in low-tax countries. Low-tax countries collect some revenues as a result of these shifted profits and hence would be affected by any U.S. tax changes that alter the incentives for U.S. firms to engage in profit shifting.

- ***Tax competition:*** The previous decade has witnessed competition among industrialized countries to attract growing volumes of footloose international investment, focused on reductions in statutory CIT rates. Countries may also choose to use more targeted tax incentives to attract inward investment. Any sizable U.S. CIT reform can therefore be expected to elicit a tax competition reaction by other countries, either through changes in their CIT rates or through changes to the design of their tax base.

13.   **Various measures are used to capture the tax burden on profits and the tax disincentive for new investment, and their relevance will differ depending on the spillover channel that is being analyzed**. The tax burden on profits earned from investment and the tax disincentive for new investment depend in practice on a range of factors including the statutory CIT rate, the tax base (notably the tax treatment of depreciation of assets), the way in which foreign income is taxed and the opportunities for firms to engage in tax planning. (Box 1).

Note that the semi-elasticity with respect the AETR is only one component of the overall semi-elasticity of FDI with respect to tax rates, which includes the effects of profit shifting and the EMTR.

Box 1. Measuring Tax Burdens on Corporate Profits

The statutory tax rate. Also sometimes referred to as the nominal or headline rate, it is the marginal rate at which a company pays tax on its taxable profits. The statutory rate is the most visible and widely quoted measure of a country's corporate tax burden, and is an important determinant of the total tax burden on both marginal investments and the investments that earn rents. In addition, cross-country differences in statutory rates are the primary driver for multinational firms to engage in profit shifting.

Average tax rate. This is a backward- looking measure, usually expressed as the ratio of tax revenues to either GDP or total corporate profits—measured using financial statements rather than taxable income— in the economy. Changes in the ratio of CIT revenues to GDP provide only limited information on the tax burden, as the ratio responds to fluctuations in the share of corporate profits in national economy over the business cycle. The share of corporate profits in GDP also depends on form of business choices (corporate or pass-through). The advantage of these backward measures, relative to forward looking measures, is that they capture factors including tax compliance behavior and the efficiency of tax administration.

Marginal effective tax rate (METR). A measure of the tax wedge between pre-tax and after-tax rates of return at the margin, where the return on the last dollar invested just covers its cost of capital. The METR is a theoretical, forward-looking measure of the tax disincentive to undertake new investment that is typically calculated for a representative group of investors, firms and assets. The METR combines information on both statutory tax rates and important features of the tax base, and captures the impact of taxes on domestic investment decisions where start up costs (for example, building a plant) have already been sunk. A key drawback is that the METR typically assumes that taxpayers remit taxes according to the tax code, ignoring tax planning behavior.

Average effective tax rate (AETR). Many investment decisions are not marginal in nature (whether to invest an extra dollar in an existing project), but instead are discrete. An important example is a multinational firm deciding where to locate a production plant, where scale economies dictate that constructing more than one plant would not be cost effective. Multinationals will typically earn rents (i.e. profits in excess of their cost of capital) on these types of discrete investments by exploiting firm-specific assets such as patents. In these cases, location decisions will likely be driven by the average effective tax rate. The AETR, like the METR, is a theoretical, forward-looking measure that captures the impact of current and expected future tax regimes on the attractiveness of a new investment project. The AETR typically assumes that taxpayers remit taxes according to the tax code and do not make use of tax planning opportunities under US "check the box" rules.

C. Spillover Effects of Proposed U.S. Reforms

Reduced CIT Rate

14.   **The trend toward lower statutory CIT rates among OECD countries has raised concerns that the U.S. CIT rate undermines U.S. competitiveness and spurs taxable profit shifting**. Statutory CIT rates in OECD member countries dropped on average by 7.2 percentage points between 2000 and 2012 (Figure 1) to 25.4 percent. Following the cut in Japan's national CIT rate in March 2012, the combined national and local CIT rate in Japan fell from 39.5 to 38 percent, making the U.S. CIT rate of 39.2 percent the highest in the OECD.[9] The U.S. effective average and marginal corporate tax rates are also above the average for G-20 countries (Figure 2). A growing CIT rate differential between the U.S. and other advanced economies spurs multinational corporations to shift profits out of the U.S. through various tax-planning measures.

Figure 1. Statutory CIT Rates in OECD Countries, 2000 and 2012 (percent)
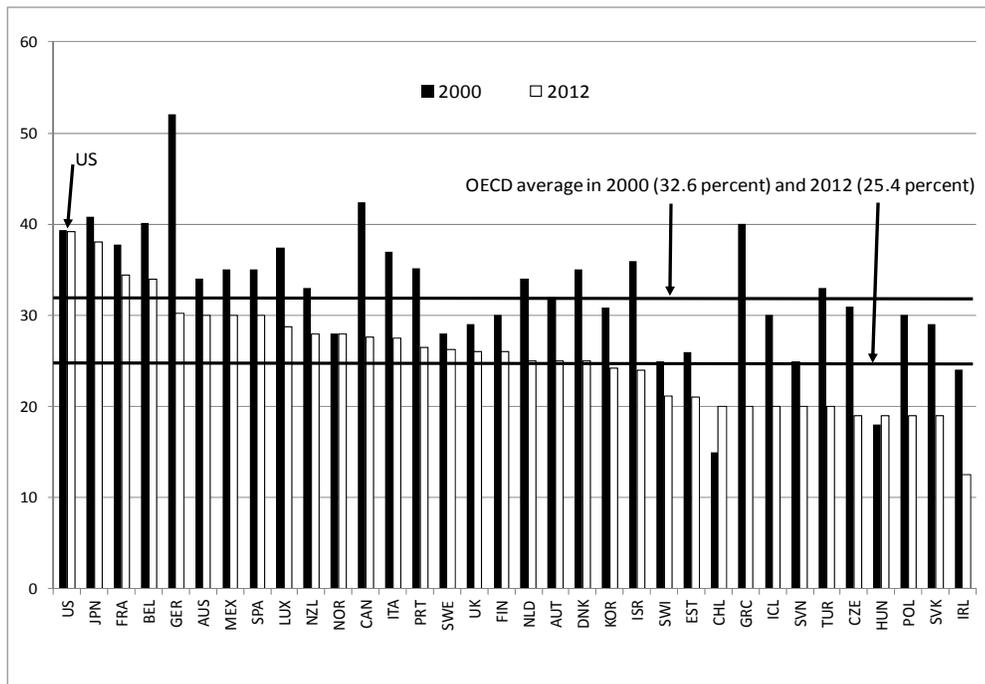
Sub-central government taxes are included. United States rate is based on a weighted average of state marginal corporate income tax rates. Source: OECD Tax Database (www.oecd.org/ctp/taxdatabase).

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[9] Japanese corporate income taxes consist of corporation tax of 25.5 percent, special local corporate tax, business tax and prefectural and municipal inhabitant taxes. A 10 percent surtax applies until 31 March 2015.

**Figure 2. Effective Average and Marginal Corporate Tax Rates in
G-20 Countries, 2011 (percent)**
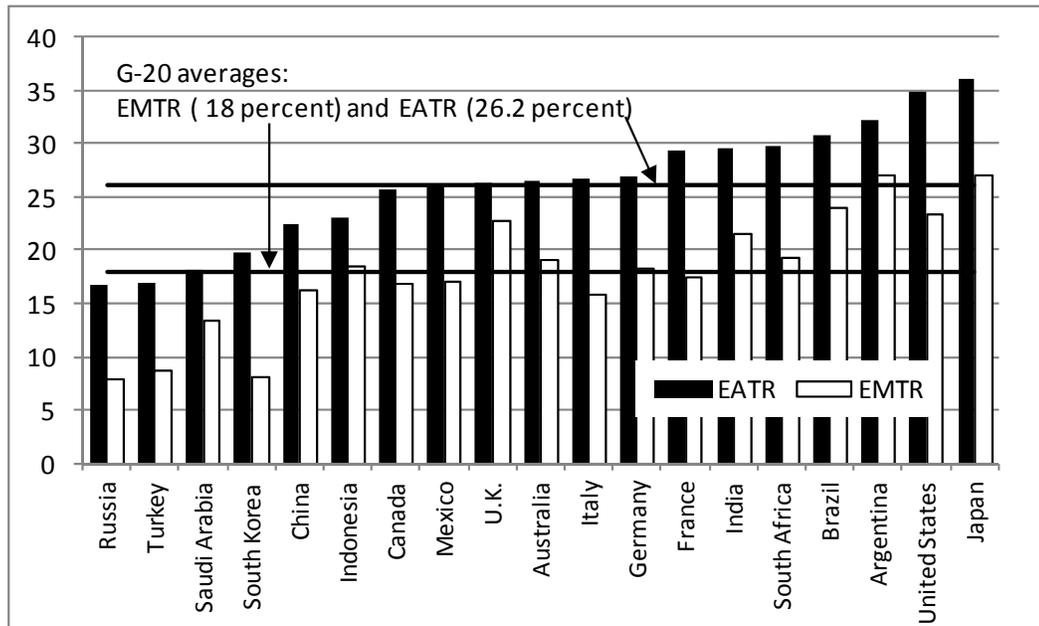
Countries ranked by effective average tax rate (EATR). EMTR is effective marginal tax rate. Assumes the following asset weights: Plant & machinery 25.6 percent; Buildings 24 percent; Intangible assets 8.7 percent; and Inventories 41.7 percent. The investments are assumed to be 35 percent debt financed and 65 percent equity financed.
Source: Bilicka, Devereux and Fuest, 2011.

15.   **A U.S. CIT rate cut would lower the global tax burden on investment and would likely increase both U.S. domestic investment and FDI.**[10] As the U.S. currently has the highest statutory CIT rate in the world, a U.S. CIT rate cut would lower the global tax burden on all forms of investment—domestic U.S. investment and U.S. inward and outward FDI. If the U.S. CIT rate were not the world's highest, then a rate cut would not reduce the aggregate tax burden on U.S. inward FDI from a higher tax country that taxed worldwide income. Also, if the U.S. did not tax worldwide income, then a U.S. CIT rate cut would not affect the tax burden on U.S. outward FDI. The combination of the high CIT rate and worldwide taxation ensure that a U.S. CIT rate cut would reduce the global tax burden on investment and could stimulate increased gross investment flows of all types.

16.   **A cut in the U.S. CIT rate would reduce the tax burden on U.S. domestic and outbound corporate investment, but the former effect is likely to dominate**. Without accompanying reforms to broaden the U.S. CIT base, a rate cut would generally reduce the U.S. marginal effective tax rate (METR),[11] resulting in increased levels of investment in the U.S. by domestic investors. More importantly in terms of international spillovers, a rate cut

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[10] In practice, FDI data includes a variety of flows besides real investment, such as the retention of earnings in foreign subsidiaries. Any empirical work should seek to use data on real capital flows.

[11] Note that for debt-financed investments, the METR is likely to be negative under current rules, implying that a CIT rate cut could actually increase the METR for these investments.

would reduce the residual U.S. tax on any foreign income that U.S. multinational firms earn.[12] The resulting reduction in the average effective tax rate (AETR) on outbound investment would tend to generate increased levels of U.S. outward FDI, with potentially beneficial effects on the economic performance and tax revenues of recipient countries. In practice, to the extent that domestic U.S. investment and outbound FDI are substitutes, a U.S. rate cut might cause U.S. companies to substitute domestic investment for FDI. In addition, the combination of deferral and tax planning strategies already limit the effectiveness of U.S. taxation of foreign income. Hence, it is possible that outbound FDI could respond negatively to a U.S. CIT rate cut.

17. **The increased attractiveness of the U.S. as a location for FDI may divert investment from other countries, but the impact would likely be limited to advanced countries.** A wide body of research shows FDI to be highly sensitive to the host country CIT rate, with a semi-elasticity of -2 to -3.[13] The increased post-tax return on inbound investment into the U.S. would likely divert FDI from other competing locations. Firms that might previously have invested in their home countries might also opt instead to invest in the U.S. following a U.S. CIT rate cut, to the detriment of their home countries.[14] This effect is likely to affect only advanced economies, which account for the large majority of outbound FDI, with little impact on developing countries.

18. **The effects of a U.S. CIT rate cut on portfolio investment by corporate entities should be similar to those on FDI flows.** Most countries – including those that operate territorial tax regimes for active business income—tax the foreign passive income of their resident companies. U.S. corporations that engaged in passive investment overseas would experience a lower residual U.S. tax burden on repatriated passive income. This in turn would provide them with greater excess foreign tax credits with which to offset U.S. tax due on other forms of overseas passive income under Subpart F rules.

19. **A U.S. CIT rate cut would also reduce the incentive for multinationals to shift *profits* overseas, to the detriment of tax revenue collections in some low-tax jurisdictions.** The incentive for multinational firms to shift profits from high- to low-tax jurisdictions, either through the manipulation of transfer prices on intra-firm transactions or through intra-group financing arrangements, is a function primarily of cross-country differences in statutory tax rates. Research shows that profit-shifting is less sensitive to relative CIT rates than FDI, but the semi-elasticity is still substantial at about -1.[15] A U.S.

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[12] This assumes that the US CIT rate cut is not accompanied by a move to territorial taxation.

[13] De Mooij and Everdeen (2008), Feld and Heckemeyer (2011).

[14] A calculation based strictly on the national welfare of these home countries would suggest that the optimal mix of domestic investment and outbound FDI is achieved when the pre-tax return in the home country equals the post-tax return in the foreign country. The pre-tax return in home countries is likely to already exceed the post-tax return in the US, suggesting the condition is not currently satisfied, and this inequality would worsen following a US CIT rate cut.

[15] Grubert (2003).

CIT rate cut will lead to the net shifting of profits from foreign jurisdictions into the U.S., reducing the tax base and revenue collections especially of low (but non-zero) tax countries. The reduced incentive for U.S. companies to shift profits might in turn reduce the attractiveness of low-tax countries as locations for real investment, leading to some fall in outbound U.S. FDI into these countries that offsets (at least in part) the positive effect of reducing the residual U.S. tax on outbound FDI.

20.   **A rate cut in the U.S. might also prompt a new round of tax competition in both statutory rates and investment incentives.** As discussed above, the last decade has seen tax competition induce a nearly universal decline in CIT rates among OECD countries. The effect of a U.S. rate cut on statutory rates in other advanced economies may be particularly powerful, given its role as the world's largest source and recipient of FDI.[16] Under the current regime, any rate cut by other countries would in part transfer revenues paid by U.S. multinationals to the U.S. Treasury. A U.S. CIT rate cut would reduce the residual U.S. tax burden on outbound FDI and may therefore prompt other countries to lower their statutory rates. However, this argument abstracts from the reality that deferral and tax planning limit the effectiveness of U.S. taxation of foreign income, providing countries with some space to cut their CIT rates.

21.   **Alternatively, other countries might grant more generous tax incentives targeted at foreign investors, in order to avoid giving a windfall tax cut to their domestic investors.** A CIT rate cut designed to attract internationally mobile investors will lead to an inefficient revenue loss for the government, as domestic investors who are less internationally mobile will also benefit. To avoid providing this windfall gain to domestic investors, governments may instead opt to introduce generous non-rate tax incentives targeted at foreign investors. This form of intensified tax competition would narrow tax bases and erode corporate tax revenues in other countries.

22.   **Non-corporate entities would not directly benefit from a CIT rate cut, dampening its effect on real investment and profit-shifting behavior.** In 2007, non-corporate pass-through entities, which include sole proprietorships, partnerships and S-corporations, accounted for 94 percent of the number of businesses, 47 percent of net income, and 34 percent of business tax revenue in the U.S. These pass-through entities would experience no direct change in their incentives to engage in outward FDI or to shift profits between the U.S. and foreign jurisdictions. However, in practice, a lower CIT rate might prompt some pass-through entities to incorporate, resulting in PIT revenue losses—but the likely size of this behavioral response is uncertain.[17]

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[16] Devereux et al. (2008) find evidence of tax competition among OECD countries during 1982–1999. Altshuler and Goodspeed (2002) show that the US is a Stackelberg leader for Europe in setting CIT rates.

[17] MacKie-Mason and Gordon (1991) find that for U.S. firms, transactions costs and other non-tax factors affecting the choice of organizational form dominate tax factors, suggesting that a CIT rate cut might have a limited impact on incorporations. However, in a more recent study of the EU, de Mooij (2008) finds that

Broadening the CIT Base

23.   **The U.S. might also consider measures to broaden the corporate tax base, with the revenue gains used either for fiscal consolidation or to pay for a CIT rate cut. The major current business tax expenditures are:** 1) accelerated depreciation, which costs $507 billion over ten years; 2) research and experimentation expensing, which costs $152 billion; 3) the domestic production activities deduction (a broad tax break for domestic manufacturing, which was introduced in 2004 to replace export incentives that violated WTO rules), which costs $127 billion; 4) non-FIFO inventory methods, which cost $70 billion; and 5) the low-income housing tax credit, which costs $33 billion.[18] Reducing depreciation allowances is a standard means of base-broadening that most OECD countries have used to offset rate cuts in recent decades. This section considers the spillover effects of U.S. base broadening measures in isolation, while the next section considers the effects of a revenue-neutral package of base broadening and rate cuts.

24.   **U.S. base broadening reforms are unlikely to have a significant impact on the size or location of outbound U.S. foreign direct investment**. Under U.S. tax rules,[19] U.S.-resident companies are required to calculate their foreign taxable incomes using rules that differ from those that apply when calculating their taxable income from domestic U.S. sources. In particular, these rules restrict the availability of accelerated depreciation allowances for tangible property used predominantly outside the U.S. The implication is that reforms to broaden the U.S. corporate tax base—for example, reducing the generosity of depreciation allowances—would not directly impact the effective tax rate on outbound U.S. FDI. However, because base-broadening reforms would increase the METR on domestic U.S. investment, they could cause an increase in outbound U.S. FDI. The size of the increase in METRs will differ across sectors, depending on the nature of the base-broadening reforms. Capital-intensive manufacturing sectors would be especially impacted by less generous accelerated depreciation allowances, while reforms to research and development tax incentives would particularly impact knowledge-intensive sectors such as pharmaceuticals. As sectors differ in their FDI intensity, the precise nature of base-broadening reforms would play a role in determining whether U.S. companies choose to switch from domestic U.S. investment to outbound FDI.

25.   **Most types of base broadening reform should not lead to any change in profit shifting behavior.** As discussed above, the incentive to engage in profit shifting is determined primarily by the difference in statutory CIT rates between the U.S. and other countries. This incentive would be largely unaffected by reforms that broaden only the U.S. CIT base and hence low-tax foreign countries would expect to see no loss in revenues

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income shifting from the PIT to the CIT via incorporations is significant, accounting for between 12 and 21 percent of CIT revenues.

[18] JCT (2011).

[19] Internal Revenue Code section 168(g)(1)(A).

collected as a result of profit shifting behavior. An exception might be base broadening reforms that limit the favorable U.S. tax treatment of debt finance (for example, limiting deductions for interest payments), which might encourage U.S. firms to shift their debt to foreign jurisdictions with more favorable treatment.

26. **Tax competition effects are likely to occur through changes in the generosity of investment incentives in the rest of the world, but the direction of change is uncertain.** The tax competition literature typically presumes that effective tax rates across countries are strategic complements, so that an effective tax rate increase in the U.S. would be expected to be accompanied by effective rate increases elsewhere. This would be consistent with a positive demonstration effect, whereby U.S. base broadening stimulates similar reforms elsewhere, in the way that the 1986 U.S. tax reforms to lower the CIT rate and broaden the base came to be seen as a model for tax reform in other countries. However, it is possible that scaling back U.S. tax incentives targeted at internationally mobile forms of capital—for example, the research and development tax credit[20]—could lead multinational firms to seek alternative investment locations. This in turn could prompt other countries to increase the generosity of their tax incentives as they compete to attract the investment displaced from the U.S. It is unclear which of these effects would dominate, but the net effect on the intensity of tax competition will depend on the nature of the base broadening reforms in the U.S. and the types of investment activity that would be affected.

27. **Non-corporate entities would be affected by base broadening reforms**. The net income of non-corporate pass-through entities is determined using the same tax accounting as corporate income, so broadening the corporate tax base also eliminates deductions for non-corporate businesses. The analysis of the impacts of base broadening reforms therefore applies equally to corporate taxpayers and to pass-through entities.

Revenue-Neutral CIT Rate Cut with Base Broadening

28. **JCT (2011) estimates that eliminating all significant CIT expenditures would enable the CIT rate to be cut to 28 percent on a revenue-neutral basis**. However, this does not take into account the effect of broadening the business tax base for non-corporate businesses, which currently account for a large share of U.S. production. JCT (2011) estimates that eliminating business tax expenditures would increase PIT revenues from pass-through entities by roughly $300 billion over ten years. In practice, some of these pass-through entities will determine that they would be better off under the lower-rate CIT regime and convert to C-corporations, which will shift revenue from the PIT to the CIT and lower the revenue gain from business tax base broadening. The magnitude of this effect is uncertain and will depend on the non-tax benefits that businesses derive from operating as pass-throughs.

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[20] Although the Volcker report (PERAB, 2010) proposes eliminating the R&D tax credit, the Administration's 2013 budget calls for making it permanent.

29.   **A revenue-neutral combination of base broadening and a CIT rate cut would likely lead to a modest increase in outbound U.S. FDI**. The precise impact of this reform would depend on the nature of the base broadening reforms, but as a first approximation it is reasonable to assume that the METR on domestic investment in the U.S. would be largely unchanged. As discussed above, the base broadening would have no direct impact on outbound U.S. FDI, due to the different tax base rules applied to foreign income, but the CIT rate cut would reduce the residual U.S. tax on foreign earnings of U.S. multinationals. In net terms, the AETR on outbound U.S. FDI is therefore likely to fall, resulting in slightly more outbound U.S. FDI.

30.   **Most revenue-neutral reforms would lead to the same incentive for net profit shifting into the U.S. as a CIT rate cut in isolation**. As discussed, profit shifting behavior is driven primarily by cross-country differences in statutory income tax rates. Accompanying a U.S. CIT rate cut with base broadening would therefore lead to the same net shifting of profits into the U.S. as a stand-alone rate cut. The exception would be where U.S. base broadening is achieved through less generous tax treatment of debt finance, which would encourage greater profit shifting into the U.S., reinforcing the impact of a standalone U.S. CIT rate cut.

31.   **A cut in the U.S. CIT rate, even if accompanied by base broadening, can be expected to prompt rate cuts elsewhere in the world**. As discussed, a U.S. CIT rate cut reduces the residual tax on outbound U.S. FDI, while base broadening reforms would not affect the effective tax rate on foreign income of U.S. multinationals. Following a U.S. CIT rate cut, foreign jurisdictions would face an incentive to cut their own CIT rates in order to attract U.S. investment.

32.   **However, implications for the tax bases of other countries would be ambiguous**. Assume that the U.S. reform leaves U.S. METRs broadly unchanged, and that the U.S. CIT rate cut sparks tax competition in statutory CIT rates elsewhere in the world. If the rest of the world were to leave its tax base unchanged, then METRs in other countries would fall due to their statutory rate cuts. This in turn would imply that METRs in the U.S. and in the rest of the world are strategic substitutes. In fact, the tax competition literature tends to suggest strategic complementarity of effective tax rates across countries, suggesting that other countries would respond to U.S. base-broadening reforms with similar reforms of their own. However, once again the precise nature of the U.S. reforms is important. If the U.S. were to reduce the generosity of incentives for footloose activities such as R&D, then this might prompt other countries to offer more generous incentives to attract any displaced U.S. activity.

Territoriality

33.   **Moving to territoriality would repeal U.S. taxation of dividends of foreign subsidiaries, so that active foreign-source earnings would be subject only to host**

country taxes. Two different measures could be applied in order to address U.S. deduction of expenses incurred to support exempt foreign earnings: Corporations could be required to allocate expenses between taxable domestic activity (allowed) and exempt foreign earnings (disallowed); alternatively, a "haircut" tax of around 5 percent could be applied to foreign active income, regardless of whether it is repatriated. The haircut would likely raise less revenue than expense allocation, although expense allocation would be administratively more challenging. Several countries with territorial systems including France, Germany and Japan impose a haircut, but no major country requires expense allocation.[21] The U.S. could also tighten its thin capitalization rules to prevent income from being stripped out of the U.S. via excessive interest payments.[22]

34.   **The impact of territoriality on real investment depends on the relative effective tax rates (both marginal and average) of the U.S. and foreign host countries.** Where low-tax countries are concerned, repeal of U.S. tax on repatriated foreign dividends will increase the tax differential between domestic and foreign investment, so U.S. outbound FDI should be stimulated. However, the loss of excess tax credits from high-tax countries, which are often used to shelter income from lower-tax countries, could lead to heavier taxation of earnings from low-tax countries, offsetting this effect. In any event, because little residual U.S. tax on foreign earnings is paid, the stimulus to outbound FDI would likely be small. The effect of territoriality on FDI to high tax rate countries would likely also be small; however, some of that investment may be siphoned off to lower-tax countries, because the effective tax rate differential between high- and low-rate countries would also increase.

35.   **Reduction or elimination of repatriation taxes should lead to greater dividend payouts by foreign subsidiaries, thereby reducing their investment abroad.** Prior to 2005, the burden of repatriation taxes was thought to be small, as MNEs could use various devices to access deferred dividends short of actually repatriating them (Altshuler and Grubert, 2003).[23] For example, firms could invest earnings passively abroad and borrow against them, or repatriate them in the form of interest or royalties. However, the large repatriations during the 2005 repatriation tax holiday indicated that, in fact, the costs of retaining earnings abroad in many cases were significant (Grubert and Altshuler, 2012). Repealing the residual U.S. tax would likely result in increased repatriation that could reduce the financial capital available abroad. However, given that 46 percent of "offshore" earnings are already invested in U.S. securities, an increased level of repatriation need not significantly reduce overseas (active or passive) investment. Further, there is some question

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[21] The U.K. does, however, limit the amount of debt on which interest may be deducted to worldwide third-party debt.

[22] A possible model for this would be Germany, which in 2007 limited net interest deductions to 30 percent of earnings before interest, taxes, depreciation, and amortization (EBITDA).

[23] This accords with the "new view" of dividends under which, as long as no rate change is expected, repatriation taxes make no difference to the decision of whether to repatriate today or reinvest and repatriate in the future.

as to whether moving to territoriality actually results in reinvestment of foreign earnings at home. Dharmapala et al. (2011) find that, despite legal constraints on the use of repatriated earnings in the 2005 tax holiday, most were actually used to pay dividends or buy back shares.

36.   **Repeal of the repatriation tax would increase the U.S. effective tax rate differential with low-tax countries, sharpening the incentive to shift taxable income out of the U.S..** This would contract the U.S. CIT base but expand that of lower-rate countries. These effects could be limited by expense allocation, more stringent thin capitalization rules, or a minimum tax on foreign earnings; a U.S. rate cut would also temper this effect. Due to the relatively high U.S. CIT rate, highly profitable companies in the information technology and pharmaceutical industries, for example, are already known to be stripping income out of the U.S. If territoriality raises the return to doing so, less profitable companies would follow suit.

37.   **A U.S. move toward territoriality could put downward pressure on foreign CIT rates, since the "shelter" provided by the U.S. foreign tax credits will disappear.** In theory, as long as the U.S. has a worldwide system, foreign countries have the opportunity to set their CIT rates just marginally below the U.S. CIT rate without discouraging U.S. FDI. In practice, however, the value of this shelter is attenuated due to deferral. As noted above, U.S. FDI has been shown in numerous studies to be sensitive to host country CIT rates; thus even under the current worldwide system with deferral, foreign countries experience a significant amount of tax competition that would likely intensify with a U.S. move to territoriality.

38.   **U.S. territoriality would lessen pressure on foreign countries to design business taxes that qualify for CIT creditability.** In order to qualify for creditability under the U.S. worldwide tax system, foreign country business taxes have to be classified as income taxes. Consumption-type taxes such as R-base cash flow taxes with full expensing and no interest deductibility, which are less distortive than a CIT, have therefore been discouraged.[24] This has been stumbling block for several countries including Canada and Mexico.[25] A U.S. move toward territoriality could thus enable a shift toward more efficient business tax design abroad.

39.   **On the whole, the net impact of a U.S. move to territoriality on foreign countries is unclear.** They might see marginally higher rates of FDI, but could also lose investment due to dividend repatriation. They could benefit from a modest increase in income shifting. Downward pressure on their CIT rates could increase, but impediments to enacting more efficient forms of business taxation, such as cash flow taxes, would be lifted. The relative magnitude of these effects is unknown, and would likely vary substantially across countries.

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[24] McLure and Zodrow (1998) argue the economic case for cash flow taxes to be eligible for foreign tax credits.

[25] Mexico's IETU was granted provisional creditability, though the U.S. stated it might review that decision in the future.

Minimum Tax on Foreign Earnings

40.   **Both the Obama administration and House Ways and Means Committee chair David Camp (R-MI) have proposed a minimum tax on U.S. foreign earnings.** The Obama proposal would embed the minimum tax in the current worldwide regime; Chm. Camp's proposal would couple it with a move to territoriality. The Camp proposal's minimum tax regime is similar to that enacted by Japan as part of its move to territoriality.[26] Under the Japanese minimum tax, foreign affiliates whose effective tax rate (i.e., the ratio of foreign taxes to earnings) is less than 20 percent are subject to current taxation at the full domestic rate, with a credit issued for foreign taxes paid. However, the Japanese minimum tax does not apply to foreign affiliates conducting an active trade of business in their host country, a provision designed to restrict its applicability to passive businesses (e.g., holding companies) located in tax havens.[27] Similarly, the Camp anti-abuse option would tax income earned by a foreign affiliate (branch or subsidiary) only if it is neither active business income nor taxed at an effective rate of at least 10 percent[28] as subpart F income.

41.   **Under the administration proposal, if a foreign subsidiary's effective tax rate in a particular jurisdiction is not at a certain (as yet unspecified) level, then the earnings would be taxed without deferral at that rate**. The minimum tax would apply to branches as well as subsidiaries. Many details of the Administration's proposal remain unspecified, and these will determine how it interacts with the CIT and how easily it can be eroded by tax planning. Presumably, any minimum tax paid would be credited against future CIT liability on repatriated earnings, but it is not clear whether any share of repatriated dividends would be exempted from U.S. taxation as a result of having paid the minimum tax.[29] It is also not clear whether, like the Japanese tax and Camp option, the Administration's proposal would contain an exception for active businesses. This would exempt active businesses in tax havens, such as tourist facilities, from paying higher taxes if owned by a U.S. parent, but would also greatly increase opportunities for avoidance.

42.   **The administration's proposed minimum tax would not apply to countries with *effective* CIT rates equal to the minimum tax rate or higher.** Note that the effective tax rate, the ratio of taxes to earnings, depends not solely on the statutory CIT rate, but on the

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[26] For description of Japanese regime, see www.ibfd.org. Unlike the U.S. proposal, however, Japan's minimum tax applies the full domestic CIT rate to foreign income that fails the effective tax rate and active income tests.

[27] To be considered an active trade or business, all of the following conditions must be met: 1) the affiliate's main business is not securities investment, licensing or leasing; 2) it maintains an office or shop in the host country; 3) it is administered in the host country; and 4) it conducts business primarily with unrelated parties.

[28] Camp's plan also calls for a reduction of the US CIT rate to 25 percent.

[29] For example, if the 15 percent minimum tax was paid, then 15/35 or 42.9 percent of earnings might be repatriated without further US CIT. Without such a provision, the minimum tax would not encourage dividend repatriation.

definition of the tax base as well.[30] In general, a host country with a statutory CIT rate equal to the minimum tax rate will have a lower effective rate if it offers any corporate tax incentives, such as accelerated depreciation or investment credits. For countries with effective rates below the threshold—many but not all of which are tax havens[31]—both FDI and inward income shifting would likely fall. These effects could be small, however, depending on the minimum tax rate chosen: If the federal CIT rate were cut to 28 percent under the President's proposal and the minimum tax rate set at 15 percent, the remaining 13 point spread between the U.S. CIT and the minimum tax[32] would still offer an incentive to shift income offshore.

43.   **If imposed in a manner that is not easy to plan around, the minimum tax could alleviate downward pressure on foreign countries' effective CIT rates,** similar to a U.S. repeal of deferral. Countries could raise their effective CIT rates to the U.S. minimum tax rate without fearing a loss of U.S.-source FDI or income tax base. This measure has the potential to limit business tax competition for low-CIT rate countries seeking real investment, while lowering the attraction of channeling income through tax havens.

D. Conclusions

44.   **The U.S. corporate tax, a high-rate worldwide regime with deferral, has a global impact due to U.S. preeminence as both a source of and destination for FDI**. The high U.S. rate encourages outward investment as well as income shifting to low-tax jurisdictions. The worldwide regime can serve to shield foreign countries from tax competition, and although this effect is attenuated by deferral, deferral also creates a large pool of U.S. offshore capital from which foreign countries can benefit. Thus, though the U.S. CIT may disadvantage domestic corporations,[33] it arguably benefits many foreign countries.

45.   **Policymakers are considering several alternative reforms of the U.S. system,** including a cut in the headline rate, base broadening, territoriality, and a minimum tax on foreign earnings. The potential effect of these reforms is summarized in Table 1 and below.

46.   **A reduction of the U.S. CIT rate will likely lead to an increase in outward FDI and/or increase in inward FDI, which would reduce the amount of capital deployed elsewhere in the world.** Due to the mitigating effects of deferral, the increase in outbound FDI is likely to be small. A rate cut will have a more substantial impact on corporations' incentive to shift income out of the U.S., since this depends primarily on CIT rate

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[30] Depending on economic and financial factors, the effective tax rate for a given company in a given jurisdiction may moreover vary from year to year, shifting it in and out of the minimum tax regime.

[31] Ireland and Bulgaria, for example, have CIT rates below 15 percent.

[32] Although the combined US federal and state CIT rate is 39.2 percent, it is likely that foreign earnings do not become subject to state-level taxes.

[33] The narrow base of the CIT also benefits domestic pass-through businesses.

differentials. To the extent that foreign countries have benefited from income shifting, their tax bases will consequently shrink. A reduction of the U.S. CIT rate is also likely to increase downward pressure on foreign CIT rates through intensified tax competition.

47.   **Corporate base broadening would reduce investment in the U.S. and could cause some increase in outward FDI, although the effect would likely be small**. It would not likely affect income shifting unless it took the form of tighter thin capitalization rules, which would reduce income shifted out of the U.S. Its largest spillover would be domestic, as it would also broaden the tax base for unincorporated firms. The combination of base broadening with a rate cut—the most likely scenario—would cause some pass-through entities to convert to C-corporations in order to be taxed under the CIT regime.

48.   **Moving to a territorial system would spur outbound investment to low-tax countries, but the effect would be modest.** Eliminating the repatriation tax would also increase incentives to shift profits to low-tax countries and could put increased pressure on foreign countries to cut their CIT rates. However, it would eliminate the need for foreign countries to maintain income taxes to qualify for U.S. foreign tax credits, enabling a shift to more efficient business cash flow taxes.

49.   **A minimum tax would have differential external effects**. Countries with effective CIT rates above the minimum tax rate would be unaffected, but those below the threshold—many of which are tax havens—could see a decline in real investment and/or profit shifting. An exception for real business activities could be designed to limit this effect to tax havens, but such an exception would open wide avenues for avoidance of the minimum tax.

Table 1. International Spillovers of US CIT Reform

		Spillover channel					
		Real investment	Profit shifting	Tax competition - rates	Tax competition - tax design	Impact on US unincorporated firms	Overall impact on Rest of World
US CIT reform proposal	**Reduced CIT rate**	· ↓ METR on US domestic investment of corporates · ↓ residual tax on outbound US FDI, ↑outbound US FDI	· ↑ net shifting of profits from RoW into US	· Pressure to↓ statutory rates in RoW	· Pressure to ↑ generosity of tax incentives in RoW	· No direct impact ·↑ tax incentive to incorporate	Negative, except for reduction in residual tax on outbound US FDI
	Broadening the corporate tax base	· ↑ ETR for US domestic investment only, ↓ US domestic investment · ↑outbound US FDI, but unlikely to be significant	· Zero impact in most cases · ↑ net shifting of profits from RoW to US if US tightens interest deductibility	· Zero impact (first order effect)	· ↓ generosity of investment incentives in RoW · Possible ↑ competition for footloose investment	· Same impact as for corporates	Small positive
	Revenue-neutral CIT rate cut and base broadening	· ↑outbound US FDI, likely to be modest	· ↑ net shifting of profits from RoW into US · Additional ↑ in net shifting of profits from RoW to US if US tightens interest deductibility	· Pressure to↓ statutory rates in RoW	· ↓ generosity of investment incentives in RoW · Possible ↑ competition for footloose investment	· Same impact of base broadening as for corporates ·↑ tax incentive to incorporate	Ambiguous
	Territoriality	· Low tax countries: modest ↑ in US FDI · High tax countries: some US FDI may be diverted to low tax countries · ↑ dividend repatrations by US MNEs, ↓ foreign investment	· ↑ net shifting of profits from US to RoW	· Pressure to↓ statutory rates in RoW	· ↓ pressure on foreign countries to design US-creditable business taxes		Mix of positive and negative
	Minimum tax on foreign earnings (15 percent rate)	· Countries with ETR<15%: ↓ in US FDI · Countries with ETR>15%: no impact	· Countries with ETR<15%: ↑ net shifting of profits from RoW into US · Countries with ETR>15%: no impact	· Alleviate downward pressure on CIT rates	· Alleviate pressure on RoW to offer generous tax incentives		Negative impact on tax haven countries

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VII.   UNITED STATES FORECLOSURE CRISIS: CAN MODIFICATION OF THE PERSONAL BANKRUPTCY FRAMEWORK FACILITATE RESIDENTIAL MORTGAGE RESTRUCTURING?[1]

A.   Introduction

1.   **The housing sector crisis in the United States is continuing and the foreclosure inventory remains high, notwithstanding recent reductions in the mortgage delinquency rate**. A significant portion of U.S. mortgages are "underwater"; i.e., the value of the property is less than the amount owed under the mortgage loan, which makes them difficult if not impossible to refinance. In the aftermath of the economic downturn, many individual debtors find it difficult to continue to service their mortgages due to financial hardship caused by job loss, reduction in income or benefits, medical problems or other life events, as well as by higher payments on adjustable rate mortgages.

2.   **Foreclosure[2] has so far been the instrument of choice for creditors to address distressed mortgages.**[3] Between March 2011 and April 2012 over 2.6 million foreclosures were initiated and over 900,000 homes were actually sold in foreclosure.[4] Wide-scale foreclosures have a detrimental effect on borrowers, lenders, and the society at large: borrowers lose the value of their main asset and a primary savings vehicle and must incur the financial and emotional costs of relocation; creditors face declining property values and additional costs associated with foreclosures; and depressed residential and commercial property values, as well as the impact of foreclosures on businesses, erode state and local

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[1] Prepared by Nadia Rendak, Andrew Giddings, Chanda DeLong, Yan Liu, Maike Luedersen, and Francis Chukwu (Legal Department).

[2] In a foreclosure, the creditor usually sells the property and uses the proceeds to satisfy its claim. A mortgage may be "recourse" or "non-recourse". In a recourse mortgage, if the proceeds from the sale of the collateral are insufficient to satisfy the outstanding debt, the debtor remains personally liable for the difference between the outstanding loan amount and the sales price (called "deficiency"). In a non-recourse mortgage, the debtor would not be liable for the deficiency. In the U.S., mortgage foreclosure is regulated at the state level. According to an IMF staff survey, mortgage loans are non-recourse in six states, while other states allow personal liability of mortgage borrowers, to a varying degree. In practice, mortgage lenders rarely seek deficiency judgments due to the cost and time involved in obtaining and enforcing such judgments and the borrower's lack of assets to satisfy the claim.

[3] In addition to foreclosure, other legal instruments are used as well. For example, the creditor can agree to take the interest in the property in satisfaction of its claim and cancel the remaining debt (also known as "deed in lieu of foreclosure"). While this procedure avoids some of the drawbacks of a foreclosure sale, its use is limited, partly due to prudential limitations applicable to financial institutions on holding real estate and the fact that while a foreclosing lender eliminates any junior liens, a lender accepting a deed in lieu of foreclosure takes the property subject to such junior liens. Another tool is a short sale, i.e., the creditor and the debtor may agree that the property will be sold and the lender would accept a discounted payoff and release the lien that is secured by the property upon receipt of less money than is actually owed. Typically the lender also releases the borrower from any deficiency claim arising from the short sale. The use of short sales has increased recently.

[4] HOPE Now Data Report available at http://www.hopenow.com/industry-data/2012-06-07-HOPENOW%20Full%20Report%20(April).Final.pdf.

government tax bases and make neighborhoods less safe (Mikhlenko, 2011–12). Foreclosure sales have also additional negative externalities, because they depress prices on neighboring properties.

3.   **Given the negative impact of wide-scale foreclosures, restructuring distressed residential mortgages could be a better alternative for all stakeholders**. Since the onset of the crisis, the U.S. government has adopted a series of programs to, inter alia, encourage voluntary mortgage modification. While these programs helped some homeowners, they have so far fallen short of expectations. The limited participation in the programs may be explained by several factors, including the large volume of distressed mortgages, the complexity of the U.S. market for housing finance that results in conflicting interests among various market players, and the voluntary nature of these programs.[5] Had such restructurings been readily available, however, the likely effect would have been a slowing down of the foreclosure process and a slowdown in the impact on lender portfolios (i.e., losses would be spread out over time, while cash flows would be restored, thereby easing the impact on lenders' balance sheets).

4.   **The mortgage securitization structure poses particular challenges for addressing the widespread housing crisis through voluntary modifications**. The process of mortgage lending prior to the housing crisis was primarily an originate-to-distribute model, which involves multiple parties with often diverging interests.[6] Under this structure, the servicer of the mortgage loan, rather than the originator of the loan or the holders of the mortgage-backed security, has the primary power to decide whether a delinquent mortgage loan goes into foreclosure or is eligible for modification. Servicers may be limited under the pooling and servicing agreements from modifying the mortgage, or may prefer foreclosures over modification to limit potential legal liability, or may have insufficient financial incentives for

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[5] The Federal Government and State Attorneys General recently entered into a court-approved settlement with several major banks over improper foreclosure practices. The settlement provides for the allocation by banks of $10–17 billion to principal reduction on distressed mortgages. The settlement has triggered more proactive actions by banks, including principal reductions.

[6] The process of lending to homeowners changed dramatically in the decade leading up to the housing crisis. The conventional mortgage market was supplanted by an originate-to-distribute model, which involved loan originators, secondary market securitizers, government sponsored entities (GSEs), mortgage-backed securities (MBS), and loan servicers. The model typically works as follows: following the origination of the mortgage to a homeowner, the lender sells the mortgage to a GSE or a private investment bank. These entities and banks securitize the mortgages (i.e., pool mortgages originated by various lenders and package them into securities for sale). The securitizer keeps a relationship with the mortgagees through a pooling and servicing agreement known as a "PSA" that binds all parties. Thereafter, a servicing agent has the responsibility of managing the homeowner's account, collecting monthly loan payments, and communicating with borrowers regarding the loan. Thus, although the servicer remains constant, a mortgage may be reassigned many times. Eventually, investment houses began repackaging residential MBS into further investment vehicles, known as collateralized debt obligations (CDOs), and then repackaged tranches of these CDOs into further CDO issuances and even "synthetic" CDOs, which were essentially credit-default swaps.

modification.[7] In addition, the multi-party structure of mortgage securitization creates confusion among the various parties, including the homeowner, who often cannot determine which party has the power to modify the mortgage.

5.   **Recognizing the challenges with the voluntary approach, consideration has been given for the introduction of a mandatory framework under the U.S. Bankruptcy Code.[8]** Several proposals along these lines were put forward at the outset of the crisis, but were met with considerable opposition from the lending industry. This paper revisits the earlier proposals and discusses how the introduction of cramdown on claims secured solely by the debtor's principal residence (hereinafter "first residential mortgages") under the U.S. Bankruptcy Code could play a role in facilitating mortgage restructurings. Under the current U.S. Bankruptcy Code, only a very limited restructuring of first residential mortgages is permitted.[9] This limited relief is inadequate to provide wide-scale assistance to the vast numbers of homeowners in financial distress seeking to preserve their homes. Several proposals advocate the elimination of this limitation to help deal more effectively with distressed mortgages for the short term and to facilitate voluntary restructurings "in the shadow" of the law for the longer term. In particular, the proposal being considered by the National Bankruptcy Conference discussed in this paper is designed to address some legitimate concerns of the lender community, in particular with respect to moral hazard, about the removal of special protection for first residential mortgages. As discussed in detail below, resolving the problem of mortgage restructuring via the Chapter 13 process could mitigate the housing crisis without a large risk of moral hazard, as Chapter 13 includes strict eligibility criteria, requires debtors to act cooperatively and in good faith in order to obtain debt relief upon completing the repayment plan, and potential abuses—including frivolous or fraudulent filings—are addressed through a variety of other legislative checks and the fact of a judicially-run process and ongoing monitoring by a trustee.

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[7] Loan modification may require servicers to incur additional costs, for which they are not specifically compensated. It is also often the case that institutions both originate and service loans, and that part of their obligation under their pooling and servicing agreement is to buy back loans they originate or service that are in default.

[8] The useful role of the bankruptcy framework to facilitate debt restructuring has been demonstrated in the corporate context and with respect to most individual debts in the U.S. For example, the success of corporate restructuring in the U.S. has been widely attributed to Chapter 11 of the U.S. Bankruptcy Code which is viewed as incentivizing workouts "in the shadow" of the insolvency law. In the area of personal insolvency, the Bankruptcy Code allows most individual debts, including secured debts, to be restructured in the Chapter 13 process (see Section B below). Both Chapter 11 and Chapter 13 are court-supervised procedures.

[9] The law allows the debtor to pay out pre-filing unpaid monthly mortgage payments over an extended period of time. Though the debtor must stay current during the bankruptcy, and other aspects of the mortgage such as principal balance, interest rate, and maturity rate cannot be modified, this limited relief is widely used by many to try to keep their homes. In the current environment, however, this relief is often not effective.

6.   **This paper is structured as follows:** Section B summarizes the current treatment of first residential mortgages under the Bankruptcy Code; Section C discusses possible approaches to reforming the Bankruptcy Code to address distressed mortgages and the foreclosure crisis; and Section D concludes with staff's views.

B.   Treatment of First Residential Mortgages Under the U.S. Bankruptcy Code

7.   **The U.S. Bankruptcy Code provides for two bankruptcy procedures—Chapter 7 and Chapter 13—that are used by the great majority of individual debtors**. Chapter 7 is essentially a liquidation procedure under which a debtor has to surrender all nonexempt property to the creditors. Secured debt is not generally subject to modification in Chapter 7, and mortgage foreclosures generally can go forward, with only a three to four months delay, despite the bankruptcy filing.[10] In contrast, Chapter 13 allows debtors to retain all of their nonexempt property on the condition that they pay to their unsecured creditors (a) as much as these creditors would have received in a Chapter 7 case and (b) all of the debtors' disposable income (i.e., income not needed either for support of the debtors and their dependents, or for production of income) that the debtors earn during the period of their Chapter 13 plan, up to the full amount of their outstanding debt.[11] Both procedures, upon their completion, afford the debtor a "fresh start" whereby the debtor is released from the remaining unsecured debt. This paper focuses on Chapter 13 which, with certain significant modifications, could be a suitable mechanism to restructure first residential mortgages, while allowing debtors to retain their homes**.**

8.   **Chapter 13 provides significant flexibility to the debtor to restructure both unsecured and most secured debt**. Under Chapter 13, the debtor does not have to pay unsecured debts in full as long as the minimum payment conditions are satisfied. Chapter 13 allows most secured debt (except for first residential mortgages as discussed in paragraph 10 below) to be modified under the repayment plan, while providing specific safeguards to secured creditors. Those secured claims are generally treated in accordance with the principle of the Bankruptcy Code that the value of secured claims is determined by the value of the collateral at the time of the filing of the bankruptcy petition. If the collateral is worth less than the secured claim, then the claim is bifurcated into a secured claim equal to the value of the collateral and an unsecured claim for the remaining amount. The secured portion of the claim must be paid in full or fully cured during the term of repayment plan confirmed by the

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[10] The filing of bankruptcy stays foreclosure against the debtor, but only until the discharge is entered, for a period of about three to four months after most individual Chapter 7 filings. While the stay technically stays in place as to the trustee, most trustees will not oppose a motion to lift the stay if the property is underwater. Also in most states, a debtor's principal residence is only partially exempted, and so, to the extent that it is not encumbered by a mortgage it would likely be subject to sale in Chapter 7.

[11] These payments are funded primarily out of the debtor's future income under a plan confirmed by the court for the duration of three to five years. Secured creditors can be repaid over time.

court, i.e., within three to five years ("cramdown"),[12] while the unsecured claim is paid pro-rata with other unsecured claims.[13]

9.   **Cramdown of secured claims in bankruptcy is not generally perceived as creating moral hazard or undermining the availability of credit**. For secured creditors, the stripping down of secured claims to the value of the collateral reflects what the secured creditor would have received in a foreclosure if the debtor had decided not to file for bankruptcy. For unsecured creditors, their claims are protected by the general principle that they should receive, in a reorganization (with the burden on the debtor to show), at least as much as they would have received in liquidation under Chapter 7. Thus, as a practical matter, they are receiving what they would likely have received had there been no bankruptcy, but with the added benefit that the creditor's collection costs are reduced, while the debtor's opportunity to participate in the economy is preserved. Another important safeguard is that any reorganization plan, including a Chapter 13 plan, ensures equitable treatment of similarly situated creditors and is based on the debtor's capacity to repay which is subject to strict evaluation and assessment by the court, thus limiting potential abuse of the bankruptcy system.[14] Neither does the procedure create moral hazard for debtors or encourage strategic default, as Chapter 13 includes strict eligibility criteria and requires debtors to act cooperatively and in good faith in order to obtain debt relief upon completing the repayment plan. Potentially abuses of Chapter 13—including frivolous or fraudulent filings—and accompanying moral hazard concerns are addressed through a variety of other legislative checks and a judicially supervised process with ongoing monitoring by a trustee.[15] With

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[12] This full payment of only the secured portion of a secured creditor's claim is also known as "lien stripping" or "strip down". The payment would cover the current value of the collateral, i.e., what the collateral is worth on the date the bankruptcy petition is filed. Since the debtor is paying over time, the amount due to the creditor is increased by an interest rate to compensate the creditor for waiting. For long-term debts, such as most mortgages, the Bankruptcy Code does allow the debtor to pay off the debt over the term of the original mortgage, subject to certain conditions. Section 1322(b)(5).

[13] This procedure for reducing secured claims to the value of the collateral supporting them was limited in 2005 by an amendment to the final paragraph of Section 1325(a), so that strip down is not applicable to certain claims secured by purchase money security interest (i.e., money lent specifically so that the debtor could buy the property). These include (i) cars purchased within a specified period (910 days) of the bankruptcy filing date, and (ii) loans for any other property purchased within one year of the filing date. These loans may, however, be modified, for example, by lowering the interest rate. See *In re Johnson* (2006). The maturity date and monthly payment amount on those claims can also be altered.

[14] The "means test," for example, requires a Chapter 7 debtor to instead file under Chapter 13 if the debtor has enough disposable income to pay all priority and secured debts, and at least 25 percent of his or her unsecured debt or a specified dollar amount, currently $11,725, over a 5 year period. 11 U.S.C. § 707(b)(2)(A)(i). The means test is intended to prevent a debtor with sufficient assets to repay creditors from abusing the bankruptcy process.

[15] While there is no direct "means test" under Chapter 13 as there is under Chapter 7, there is a cap on the amount of individual debt (see Box 1). In addition, under Chapter 13 there is a detailed review of the entire financial situation of the debtor as well as a certificate of credit counseling. A three or five-year plan is developed, requiring the debtor to live on a fixed budget for a prolonged period and not to incur new debt

respect to availability of credit, evidence (particularly with respect to Chapter 12, discussed below) has suggested a minimal impact from judicial cramdowns of secured claims.

10. **However, Chapter 13 provides an important exception to the general principle of restructuring secured claims in that it expressly prohibits modification of claims secured *solely by a mortgage on the debtor's principal residence*.** As discussed above, most secured claims, including mortgages on vacation, business, rental or investment property, and on automobiles and other vehicles, can be modified in the Chapter 13 procedure. However, a Chapter 13 plan cannot modify the rights of holders of claims "secured *only by a security interest in real property that is the debtor's principal residence*" (Section 1322(b)(2), emphasis added). This provision has been interpreted to prohibit not only modification of the terms of the original mortgage loan (e.g., by changing the interest rate that could lower the debtor's monthly payments) but also cramdown on first residential mortgages, without the consent of the mortgage holder.[16] The only remedy available to the debtor under Chapter 13 with respect to a first residential mortgage is to retain the residence by curing the pre-bankruptcy payment default by paying all mortgage arrears and by remaining current on future payments during the term of the plan.[17] For the many debtors with distressed mortgages who need to reduce the actual monthly payment in order to be able to keep their home,[18] Chapter 13 is currently of limited use.

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without court approval. A plan can be modified after confirmation, upon request by the debtor, the trustee, or the holder of an allowed unsecured claim, to address the situation where a debtor subsequently has increased income. In cases of fraud or withholding of information, the court can dismiss the proceedings and refer the case to the U.S. Attorney's Office for criminal prosecution where appropriate.

[16] This interpretation was provided by the Supreme Court in its 1993 decision in *Nobleman* (1993). The court held that the prohibition on modification of the mortgagee's rights included the prohibition of cramdown. Prior to the 1993 decision the exact meaning of Section 1322(b)(2) had been subject to different interpretations by U.S. courts, with some allowing cramdowns, and others not.

[17] Section 1322(b)(5) (allowing the debtor to cure defaults and maintain payments on long-term debt). The Bankruptcy Code allows mortgages on which the last payment on the original payment schedule is due before the final payment under the plan is due to be modified if they are provided for under section 1325(a)(5). As most debtors start having difficulties with servicing the mortgage in its earlier years, this provision is of limited use to such debtors.

[18] There are various ways to reduce monthly payments: interest rates can be temporarily or permanently lowered, the principal balance can be reduced, interest or principal might be deferred, or the maturity date might be extended. However, all these techniques involve modifying the mortgage, which is something the current law prohibits.

Box 1. Chapter 13 Procedure

Chapter 13 of the U.S. Bankruptcy Code is designed for individual debtors who, while allowed to retain most of their property, can repay at least some of the debt to their creditors. To use the Chapter 13 procedure, the debtor must be an individual who has regular income and whose debts do not exceed certain thresholds established by law. (The debt thresholds are revised on a regular basis. Currently, the debtor's noncontingent, liquidated unsecured debt may not exceed $336,900 and noncontingent, liquidated secured debt may not exceed $1,010,650. Individual debtors engaged in business may file Chapter 13 cases if their debts are within the debt limits for Chapter 13). A Chapter 13 procedure broadly consists of the following stages:

- A debtor can initiate a Chapter 13 proceeding by filing a petition in court. The petition is accompanied by a comprehensive disclosure about the debtor's financial situation, including assets, liabilities and past and prospective income. Together with the petition or within 14 days after the petition is filed, the debtor must also submit a repayment plan.

- The filing of the petition triggers an automatic moratorium ("stay") on most enforcement actions by creditors, and an appointed trustee oversees the procedure.

- Shortly after the filing of a petition a creditors' meeting takes place, at which the trustee and creditors can examine the debtor. Following the creditors' meeting a confirmation hearing is held at which, subject to objections by the trustee or creditors,[1] the plan may be confirmed by the court. Once the plan is confirmed, it becomes binding on the debtor and all creditors.

- After confirmation, monthly payments are made to the trustee, who distributes those payments to creditors in accordance with the confirmed plan. The debtor continues to control all of his or her property. The monthly payments are often automatically deducted from the debtor's salary. The payments continue for the term of the plan (three to five years).

Upon the completion of the Chapter 13 plan, the debtor can receive a discharge on the remaining unsecured debts covered under the plan.[2] If the debtor fails to complete the plan, and cannot propose an acceptable modification, the case would normally be dismissed or converted into a Chapter 7 liquidation.

The key objective of Chapter 13 is to give an individual debtor who has completed a repayment plan a "fresh start" and to make the debtor an economically productive member of society. While Chapter 13 is widely used, for the reasons described in the paper, it does not allow for adequately restructuring distressed mortgages secured by the debtor's principal residence, thus making it of limited use in addressing the current foreclosure crisis.

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[1] The most frequent objections are that the debtor's plan does not commit all of the debtor's projected disposable income for the applicable commitment period or that the debtor will be unable to make the payments called for by the plan.

[2] Section 1328(a). Some debt, for example certain student loans and tax claims, alimony and child support obligations, and liability for injuries or death resulting from drunk driving, cannot be discharged in bankruptcy.

11.   **While the special protection for first residential mortgages in bankruptcy may help promote the availability of residential mortgage finance, it also limits the use of the bankruptcy process to restructure first residential mortgages.** The special protection was included in the Bankruptcy Code during bankruptcy reform of 1978. At that time, the House and Senate proposals to allow modification of secured debt (including first residential mortgages) in bankruptcy were opposed by real estate lending associations who argued that allowing cramdown on such mortgages would discourage the flow of credit into the home mortgage market. As a compromise, the final bill prohibited modification of debts secured by an interest in real property that is the debtor's principal residence (Santos, 2008–09). However, shielding first residential mortgages from cramdown under Chapter 13 limits the debtor's ability both to include in a repayment plan what is often the debtor's largest secured debt and to avoid a foreclosure on the debtor's principal residence. This limitation in Chapter 13 thereby bars the one form of relief that many debtors today need most in order to save their homes.

12.   **The elimination of special protections for first residential mortgages has been debated for some time as a way to help provide appropriate relief to distressed homeowners**. Even prior to the 1993 decision of the Supreme Court confirming the prohibition on bifurcation of claims for mortgages secured by the principal residence, several attempts were made to address the uncertainty of whether cramdowns on first residential mortgages were permitted. In 1991–93, several bills were introduced to clarify that issue, although no legislation was passed (Miles, 1993).[19] During those discussions the lending industry remained strongly opposed to allowing any type of cramdown for first residential mortgages, arguing that this would shift the risk of loss on mortgage loans to creditors, as opposed to debtors, and this additional risk would lead to an increase in the cost of home mortgages and undermine credit availability. The industry also argued that allowing cramdown would unfairly advantage debtors by allowing them to keep their homes, cramdown their mortgages, and benefit from a windfall from future property appreciation at the expense of secured creditors.

C.   Possible Approaches to Reforming the Bankruptcy Code on First Residential Mortgages

13.   **Given the negative impact of foreclosures and limited success with voluntary restructuring since the onset of the housing crisis, several proposals were put forward to modify the treatment of first residential mortgages in bankruptcy.**[20] A number of bills

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[19] Those bills sought, with variations, to remove the limitation on stripping down first residential mortgages.

[20] This section focuses on proposals that envisage modification of the bankruptcy law. It does not discuss numerous other initiatives to address the housing crisis, including through legislation (such as a proposal by Professors Morrison and Piskorski to address wide spread foreclosures through a combination of incentive fees for servicers and legislative modification of servicing agreements to clarify the issue of servicers' legal liability)

(continued)

proposed in 2007 through 2009 covered a spectrum of options with a range of views about amending Chapter 13 to allow modification of first residential mortgages (see Box 2)**.** These bills, which were again strongly opposed by the mortgage lending industry, triggered a robust debate on the pros and cons of the cramdowns on first residential mortgages.

Box 2. Legislative Proposals to Amend the Bankruptcy Code (2007–2009)

In 2007, as the gravity of the housing crisis became clear, a number of legislative proposals were made (the proposed bills included the Specter, Durbin, Miller, Chabot, and Conyers bills) covering a range of views about amending Chapter 13 to allow modification of first residential mortgages. Key elements of several proposed bills included: (i) lowering the principal amount of the mortgage loan to reflect the fair market value (as opposed to the mortgaged-value) of the home and reamortizing principal residence mortgage debt at reasonable fixed interest rates over a period of up to 30 years; (ii) allowing a payment period for claims secured by the debtor's principal residence to exceed the 5-year limit set out for plans under Chapter 13; (iii) eliminating a credit counseling requirement for Chapter 13 debtors facing foreclosure; (iv) clarifying that the holder of a claim maintains a lien on the property until the payment of the claim; (v) protecting against excessive fees; and (vi) including a "sunset provision" on mortgage modifications in Chapter 13.

Other proposals in the bills were to: (i) require that all fees and charges on secured debts while a Chapter 13 plan is in effect be subject to objection in the bankruptcy court; (ii) codify for consumer cases that mandatory arbitration clauses need not be honored in core proceedings; and (iii) prevent use of judicial estoppel to eliminate consumer protection claims against lenders based on inadvertent nondisclosure of such claims in the borrower's bankruptcy.

Ultimately a bill sponsored by Rep. Conyers was passed by the House in 2009 that would have allowed cramdowns. However, in light of strong opposition from the lending industry, including groups such as the American Bankers Association and the Mortgage Bankers Association, version parallel bill, sponsored by Senator Durbin, did not pass the Senate. A bill without the cramdown provisions was passed and signed into law on May 20, 2009 (Public Law 111-22).

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14. **Supporters of cramdown argued that the reform would not only help address the ongoing housing crisis but also address longer-term issues**. In their views, there is no evidence that removal of special protections for residential mortgages in bankruptcy would significantly affect the availability or cost of mortgage financing.[21] In addition, it was argued that the current law benefits those lenders who may have contributed to the housing crisis through questionable mortgage lending practices, and that removal of special protections

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and the proposals to introduce policies that would encourage and/or mandate the GSEs to implement principal reductions on mortgages held by such entities.

[21] Levitin (2009). Also, there appears to be no evidence that, during the time when some courts allowed cramdown on first residential mortgages prior to the 1993 Supreme Court decision, cramdown affected the availability or cost of mortgage financing in areas covered by the decisions allowing cramdown.

would encourage more prudent lending, thus potentially avoiding a repeat of the subprime crisis.[22] They further argued that allowing cramdowns would help convert non-performing first residential mortgages with rapidly declining market value into performing loans backed by stabilizing collateral, thereby benefiting both debtors (retaining their home) and creditors (converting a non-performing loan into a performing one). Finally, cramdowns overseen by the court would also help address the capacity, incentives and liability problems of mortgage servicers, which are key obstacles for voluntary loan modifications (see also paragraph 4 above). More generally, it was argued that enabling an individual debtor to restructure a distressed mortgage into a sustainable one is consistent with the philosophy of "fresh start" and would contribute to increased consumer spending, which is the engine of the economy.

15.   **The key arguments against cramdowns focused on the availability and the cost of mortgage financing and moral hazard concerns**. Given the importance of securitization for mortgage finance market in the U.S., the opponents expressed concerns that allowing cramdowns could undermine the securitization market for residential mortgages, which is already under stress (Scarberry, 2009–10). They further argued that this could create incentives for "strategic defaults" and may trigger a significant increase in bankruptcy filings that could potentially overwhelm the court system: the possibility of stripping down the mortgage to the current market value would encourage debtors who are current on their mortgages to stop paying and file for bankruptcy. On a more technical level, they noted that any proposal allowing re-amortization of mortgage loans over an extended period of time at a lower interest rate would result in first mortgage holders being treated less favorably than other secured creditors and may require extending the statutory duration of the Chapter 13 repayment plan.

16.   **A recent proposal being considered by the National Bankruptcy Conference (NBC) is designed to retain the benefits of cramdowns, while addressing the legitimate concerns of the lender community**. The NBC is a non-profit, non-partisan, self-supporting organization whose membership encompasses lawyers, law professors, and bankruptcy judges who are leading scholars and practitioners in the field of bankruptcy law. Its primary purpose is to advise Congress on the operation of bankruptcy and related laws and any proposed changes to those laws. The NBC has played a prominent role in all bankruptcy reforms since the time it was established in 1938.[23] The NBC is currently considering a proposal for the reform of Chapters 7 and 13 of the Bankruptcy Code as they relate to individuals that would, inter alia, eliminate the prohibition on restructuring first residential mortgages. The current version of this proposal, which builds on the earlier initiatives to amend the Bankruptcy Code (see Box 2), includes the following key elements:

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[22] However, as discussed above, mortgages often are transferred away from the original mortgage lender through the securitization process; therefore, the mortgage holder at the time of the resolution of the distressed mortgage is almost always a different entity.

[23] For example, the NBC provided its views to the lawmakers on the bills discussed in 2007–09.

- As is the case now, the Chapter 13-type procedure would have built in safeguards against abuse, including abuse by wealthy individuals. In addition to the existing safeguards discussed above, there would be additional mechanisms to ensure that high income individuals pay a progressive share of their future income to creditors.

- The reformed procedure would allow first residential mortgages to be stripped down to fair market value of the residence as of the bankruptcy petition date and re-amortized over a period not to exceed 30 years, payable at the rate equal to the prime rate plus some risk premium.

- If a re-amortized mortgage results in the debtor paying more than a certain percentage of the debtor's gross income for principal, interest, taxes, and insurance, a presumption would arise that payment of the obligation is an undue hardship on the debtor, which could be rebutted by either the debtor or the holder of the mortgage. In the event of an undue hardship, the debtor's plan would not be feasible and the debtor would not be able to keep the principal residence.

- Secured creditors would be in a position to recapture some equity if the property is sold or refinanced within the specified period following the restructuring in bankruptcy. For example, if the debtor sells or refinances the real property within a year after the principal is reduced at a price in excess of the reduced value (plus costs of sale and improvements), 50 percent of the difference would be payable to the lender. Another alternative under consideration is staggering the shared appreciation over several years.[24]

17. **Allowing cramdowns on first residential mortgages would not be a completely new concept for U.S. bankruptcy law**. In particular, Chapter 12 of the Bankruptcy Code that deals with insolvency of family farmers and family fisherman does not contain a prohibition similar to the one in Chapter 13 (see Box 3). It is therefore possible for the debtor under Chapter 12 to restructure a mortgage on his or her principal residence located on a farm. Chapter 12—added to the Bankruptcy Code in response to the farm foreclosure crisis in the 1980s—has been successful in addressing the crisis and thus provides some evidence of the merits of cramdowns in this context. As mentioned in Box 3, the introduction of cramdowns in Chapter 12 did not adversely affect the availability and cost of credit, nor did it create serious moral hazard problems.

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[24] For example, if the debtor sells or refinances the real property within the first year after the principal is reduced at a price in excess of the reduced value (plus costs of sale and improvements), 80 percent of the difference would be payable to the lender; if within the second year after, 60 percent of the difference would be payable to the lender; if within the third year after, 40 percent of the difference would be payable to the lender; and if within the fourth year after, 20 percent of the difference would be payable to the lender.

Box 3. The Experience with Chapter 12

Chapter 12 of the U.S. Bankruptcy Code, which was added to the Code to address the farm foreclosure crisis in the 1980s, provides some evidence of the merits of cramdowns in facilitating mortgage restructuring.

- In the 1980s, the United States farming industry went through a classic boom-bust cycle, resulting in severe hardship. Similar to the U.S. housing market recently, the key factors were high levels of debt, declining land/property values, and a poor economic environment. In particular, small independent family farms were being increasingly subject to foreclosure. As a result, Chapter 12 was introduced into the Bankruptcy Code. While similar to Chapters 13, it addresses the economic situation of family farmers and family fishermen.[1]

- Importantly, Chapter 12 allows modification of a mortgage on the debtor's principal residence if it is located on the family farm.[2] Though ordinarily a Chapter 12 plan may not provide for payments over a period of more than three years (the court can approve, for cause, a period of no more than five years), there are no established limitations on modification of claims secured by residential mortgages.

- A Chapter 12 proceeding is similar to a Chapter 13 proceeding including, *inter alia*, an automatic stay of most collection actions, a meeting of creditors during which the debtor is under oath, and that typically problems are resolved with a plan finalized during or shortly after the meeting. Chapter 12 also requires that the plan include certain mandatory provisions, similar to Chapter 13. Finally, like Chapter 13, Chapter 12 has debt limits. It is, for example, restricted to family farmers who have less than $3,792,650 (an amount indexed to adjust for inflation) in debt.

- Chapter 12 was initially intended to be a short-term measure with a "sunset provision", but it was extended twice, and in 2005 it was made permanent.

Experience indicates that Chapter 12 ended up being extremely effective. The cost and availability of farm credit was essentially unaffected, and it is argued the success of Chapter 12 led to a decrease in its use as lenders and borrowers were incentivized to engage in mortgage modification on their own (in the "shadow of the law"). Out of the 30,000 bankruptcy filings that the U.S. General Accounting Office was expecting, only 8,500 were filed in the first two years. In recent years, only a small percentage of farmers have filed under Chapter 12.

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[1] See 11 U.S.C Chapter 12. See also 11 U.S.C §§ 101(18) and 101(19). Dreher and Feeney (2007).

[2] See 11 U.S.C. § 1222(b)(2) (A plan may "modify the rights of holders of secured claims, or of holders of unsecured claims, or leave unaffected the rights of holders of any class of claims.")

18.   **The U.S. is not the only country dealing with excessive mortgage debt in the aftermath of a housing crisis**. Unlike in the area of corporate insolvency, there are currently no international best practices in the area of personal insolvency law, including the treatment of residential mortgages in insolvency. Other countries are struggling with similar problems and have been experimenting with different approaches to address the issues of mortgage debt and related financial sector stability. Appendices I and II describe the treatment of mortgages in personal insolvency in Norway and the recent experience of dealing with personal debt distress in Ireland, respectively. While other countries' experiences necessarily reflect specific economic and social realities of a particular country and therefore cannot offer any universal solutions, they are nevertheless instructive.

D.   Staff's Views on Bankruptcy Code Modification

19.   **Given the limited success of voluntary mortgage modifications, an effective court administered process would supplement the efforts to address distressed mortgages and to limit widespread foreclosures.** The U.S. authorities have acknowledged that the existing programs to support the voluntary approach to mortgage modifications have so far had limited success. Consideration should be given to allowing first residential mortgages to be modified without the secured creditors' consent in bankruptcy. Special protections for these mortgages established in the late 1970s appear no longer justified in the current economic environment, and they limit the use of personal bankruptcy as a tool to restructure distressed mortgages.

20.   **Staff is of the view that allowing cramdowns of first residential mortgages in bankruptcy would have significant short- and long-term benefits.** While the number of bankruptcy filings could increase upon the introduction of the new legal framework, once the new rules are tested in courts and experience with their application is gained, the mere existence of such a framework would incentivize more voluntary modifications outside of bankruptcy, contributing to a more speedy resolution of the foreclosure crisis. Importantly, allowing cramdown would address the issue of capacity, potential liability and conflicts of mortgage servicers and GSEs, which hinder voluntary modifications. If properly designed, the proposed changes would minimize potential moral hazard for debtors (including strategic default), increase the likelihood of renewing cash flows for creditors, and provide a cushion against falling real estate values by reducing the number of foreclosures, thereby relaxing the downward pressure on the mortgage-backed securities still held in many bank portfolios and consequently benefiting the financial industry. The experience with the introduction of Chapter 12, which allows cramdowns on residential mortgages for family farmers and family fishermen, supports many of these views. This reform, in combination with a broader reform of the mortgage lending system, would also encourage more prudent mortgage lending and a more stable system of mortgage financing in the long term.

21.   **Staff is also of the view that despite fears that allowing cramdowns of first residential mortgages would increase moral hazard for debtors, there is little merit to this argument**. As noted above, Chapter 13 already contains a number of provisions to reduce moral hazard, as well as opportunism and fraud, including debt limits for Chapter 13 eligibility, the requirement that creditors must receive at least as much as they would have under Chapter 7, a thorough review of a debtor's finances and a plan designed accordingly, the ability to adjust plans if circumstances change, minimum length of repayment plans, and methods to deal with abuse. The experience with bankruptcy procedures in general, and Chapter 12 in particular, has shown that the risk of abuse is limited. Debtors in general tend to file for bankruptcy as a last resort, due to the social stigma and effect on the debtor's future ability to access credit.

22.   **Any change to the current legal framework to allow cramdown of first residential mortgages should be properly designed to balance the interests of debtors and creditors and to minimize moral hazard**. In particular, issues that would need to be addressed would include: eligibility (e.g., whether modification would be allowed only for mortgages originated prior to a certain date, or for a particular group of debtors); whether the new rules should be temporary (as was initially the case with Chapter 12) or permanent; how property valuation and interest rate would be established for the cramdown; and whether the duration of the Chapter 13 plan should be modified and what happens if the plan fails. To minimize moral hazard for debtors and to make it more acceptable to lenders, the new proposal could include a mechanism that would allow creditors to share in the appreciation of the property within a specified period following the restructuring. Further analysis would also be required on issues such as consistency of any new proposal with state law and the likelihood of extensive litigation.

23.   **While certain stakeholders could suffer losses with the proposed changes to the Bankruptcy Code, the impact on the future securitization market would likely be limited**.[25] Current holders of mortgage-backed securities face potential losses related to either holdings of mortgage-backed securities or guarantees on first residential mortgages.[26] The

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[25] A study by Levitin and Goodman (2008) exploits the time and cross-state variation in bankruptcy laws to study the effect of bankruptcy strip down and modification on principal home residence mortgage rates, using data from the Monthly Interest Rate Survey conducted by the Federal Housing Finance Board between 1988 and 1995. The results show that permitting strip down has no impact on originations and increases mortgage interest rates by only 10–15 basis points, a result that is statistically significant in some but not all specifications.

[26] The extent of the losses to be suffered by holders depends on the structure of the original securitization transaction and the terms of the document governing the allocation of the interest and principal payments on the underlying mortgages. The primary securitization structure at risk is the "shifting interest" structure, which was used by almost all of the prime and much of the Alternative-A or "Alt-A" market, the securities generally given the highest ratings. In the "shifting interest" securitization structure, principal losses, including those from write-downs in bankruptcy, would generally be allocated to the most subordinated classes. However, in certain "shifting interest" transactions, bankruptcy losses in excess of a certain amount specified in the securitization document would be allocated pro rata among all classes of senior and subordinated certificates.

GSEs, which guarantee a large percentage of U.S. home loans, could suffer losses due to write-downs of the mortgage principal that would cause the value of guarantees to decline.[27] Although predicting the precise effects of cramdown on the future securitization market is challenging, particularly in light of the current uncertainty in the mortgage market,[28] the effects will likely be limited, as the added write-down risk will likely be accounted for in the instrument governing the securitization, and the security will be priced accordingly.

24.   **Changes to the personal insolvency law are not a panacea or a silver bullet and will not resolve the foreclosure crisis or revive the housing market overnight.** While these changes will help support the restructuring of first residential mortgages in bankruptcy, foreclosure would continue to remain the most likely outcome in cases where the debtor is unlikely to afford repaying even the restructured mortgage loan. The U.S. authorities should continue to implement other initiatives aimed at resolving the foreclosure crisis and addressing the problems that caused the collapse of the housing market. In particular, work should continue on a broad range of issues that have an impact on the housing market, including the GSE reforms, reviving securitization and developing new models for mortgage financing, encouraging prudent mortgage lending by banks without stifling home credit, addressing unemployment issues, and continuing education of consumers.

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[27] Note however that while the GSEs have been in the past opposed to principal reductions, recent reports appear to indicate that the GSEs are starting to view principal reductions, albeit outside of bankruptcy, as a net positive for these entities, the U.S. taxpayer, and the housing market. Arnold (2012).

[28] For a discussion of the uncertainty in the mortgage market, see Duke (2012).

APPENDIX I. NORWAY—TREATMENT OF RESIDENTIAL MORTGAGES IN PERSONAL INSOLVENCY

During the banking crisis and the recession from 1987 to 1993, the number of households with unsustainable debt increased dramatically due to growing unemployment, increased rent, and other economic misfortunes. To help individuals regain their financial capacity through debt relief, the new Debt Reorganization Act (the "Act") was adopted in 1992 and came into force in January 1993. The Act applies only to individuals and does not generally cover debt relating to their private businesses, unless the debtor's business had closed, or business-related debt is a small share of the total debt. Relief under the Act is available only to debtors who are "permanently incapable of meeting their obligations", and can be used only once. "Permanent incapacity" is understood as the inability to pay lasting for a "reasonable period" (approximately 5 years).

The Act provides for two types of debt relief—voluntary debt settlement and compulsory debt settlement. Both procedures are initiated by the debtor. The filing by the debtor of an application to initiate a voluntary debt settlement procedure triggers a temporary (4-month) moratorium on the enforcement of claims against the debtor. Once the administrative body "the sheriff," that is a local Enforcement Officer, initiates the voluntary debt settlement procedure, the debtor prepares a debt settlement plan which describes how the debtor will pay his or her creditors for the duration of the plan (normally 5 years or longer in exceptional cases). The sheriff assists the debtor to create a plan in accordance with the legal conditions. The plan may provide for the suspension of payments, reduction of interest rates, full or partial write-downs of debt, or any combination of the above measures. To become effective, the plan must be accepted by all creditors. If the voluntary settlement fails, the debtor can request a compulsory debt settlement in a court-administered procedure by having the debt settlement plan—which should meet the conditions set forth in the Act for the plan under the voluntary procedure—confirmed by the court. At the successful completion of each procedure the debtor obtains a "fresh start" by receiving a discharge of most of the remaining debts.

The general assumption for a repayment plan is that the debtor should pay as much as he or she can to creditors over a fixed period of the plan, while keeping a reasonable amount of income to cover his and his household's essential needs. Thus, as a general rule the debtor would be required to sell all his or her valuable assets to repay the creditors. The Act, however, includes special provisions concerning the debtor's primary residence:

- The general rule is that the debtor must sell his or her primary residence if its sale provides the best settlement for the creditors and the residence exceeds the reasonable needs of the debtor and his or her household. This assessment is made by the creditors in the voluntary debt settlement procedure, and by the court in a mandatory debt settlement procedure, based on the market value of the dwelling and the cost of providing the debtor and his family with the reasonable alternative living

arrangements. If the above conditions are not met, the debtor can keep his or her home.

- If the debtor is allowed to keep his or her residence, the Act allows for the reduction of the principal of the residential mortgage to 110 percent of the market value of the residence (as determined through official valuation) in a voluntary debt settlement plan. During the period of the plan (normally 5 years), the debtor pays interest specified in the original mortgage agreement but not on the reduced principal, and payments on the stripped down mortgage (both interest and principal) resume after 5 years. The deficiency claim is treated as an unsecured claim for purposes of the debt settlement arrangement, receiving pro-rata payments with other unsecured claims, and any residual would be discharged at the end of the arrangement.

In the first years after the introduction of the Act, most cases were resolved through the compulsory procedure in courts, as it proved difficult to achieve the required creditor consents in the voluntary debt settlement. However, this dynamics was quickly reversed. Also, concerns about courts getting overwhelmed with bankruptcy filings did not materialize.

APPENDIX II. IRELAND—REFORM OF THE PERSONAL INSOLVENCY FRAMEWORK

The financial and economic crisis in Ireland has put significant financial pressure on households, mainly driven by the large rise in unemployment from 4.6 percent in 2007 to 14.4 percent in 2011. Mortgage arrears on principal private residences increased to 10.2 percent of the number of mortgage accounts and 13.7 percent of outstanding mortgage balances in March 2012. The share of mortgages that have been restructured rose to 10.4 percent at end-March 2012, but more than half of restructured loans are in arrears, indicating that deeper loan modifications are needed in some cases. Given the substantial decline in house prices, negative equity is extensive. For loans granted during 2005–2008, almost half of the owner-occupied properties are now in negative equity. However, negative equity does not imply arrears as the vast majority of negative equity borrowers, over 90 percent, were not in arrears at end-2010.

The authorities responded to the rising mortgage distress with consumer protection measures for households in arrears and a sequence of reports exploring options to resolve debt distress through bilateral engagement between lenders and borrowers. The Code of Conduct on Mortgage Arrears (Code)[29] was adopted in early 2010 and applies to mortgages on principal private residences. The Code, as revised, sets out procedural protections and provides guidance on mortgage restructuring for borrowers unable to pay. In particular, it provides a moratorium on repossession for 12 months while the borrower engages with the lender. The Code seeks to encourage early and effective engagement between borrowers and lenders and mainly resulted in mortgage rescheduling (i.e., reducing payments to interest-only). Further work was undertaken by the Mortgage Arrears and Personal Debt Group towards developing a Mortgage Arrears Resolution Process. In its final report[30] in 2010, the group recommended a deferred interest scheme for households with sustainable mortgages (i.e., where the household can pay at least two-thirds of the interest due). For households with unsustainable mortgages, options such as assisted sales and trading down may be less costly than formal repossession. In 2011, the Inter-Departmental Mortgage Arrears Working Group[31] explored options such as split mortgages, mortgage-to-rent, or trade-down.

The existing High Court based personal insolvency framework of judicial bankruptcy is costly, punitive, and inefficient, and the number of bankruptcy cases is very low, with 29 new adjudications in 2010 and 33 in 2011. Drawing on the recommendations by the Law Reform Commission[32] in recent years, some of the rigidities in the Bankruptcy Act of

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[29] See Code of Conduct on Mortgage Arrears.

[30] See Final Report of the Mortgage Arrears and Personal Debt Group.

[31] See Final Report of the Inter-Departmental Mortgage Arrears Working Group.

[32] See Final Report of the Law Reform Commission.

1988 were removed in 2011. Despite these initial reforms, the comparatively long discharge period (automatic discharge after 12 years or, at the court's discretion, subject to certain conditions, after five years) renders bankruptcy an inefficient approach for resolving personal debt issues. Although it may be feasible to consider the restructuring of secured debts in the context of an arrangement under the control of the High Court, secured creditors may opt to remain outside bankruptcy proceedings.

In the context of the broader legal reform envisaged by the authorities, an outline of the personal insolvency bill was published in January 2012[33] **and the final Bill was published in June 2012.**[34] To reduce the attraction or need for the initiation of judicial bankruptcy proceedings, three new procedures that significantly change the law and practice on personal insolvency are proposed with the aim to resolve most cases through voluntary arrangements. The three new non-judicial debt settlement procedures are as follows:

(i) a Debt Relief Notice to allow for the discharge of relatively small amounts of unsecured debt, subject to conditions, up to €20,000 total for persons with essentially no income or assets, subject to a supervision period of three years;

(ii) a Debt Settlement Arrangement (DSA) for the settlement of unsecured debt (no monetary debt limit to provide for maximum flexibility), normally over a five year period; and

(iii) a Personal Insolvency Arrangement (PIA) for the settlement of both secured debt up to €3 million (though this limit may be increased by agreement of the creditors) and unsecured debt (no limit), over a six-to-seven year period.

The proposed legislation would also reform the Bankruptcy Act of 1988 and provide for the automatic discharge from bankruptcy, subject to certain conditions, after three years, and permit court orders requiring payments from income for up to five years in the bankruptcy process. Further, it provides for the establishment of a new Insolvency Service of Ireland to operate the proposed new non-judicial insolvency arrangements.

For both the DSA and PIA, the debt service arrangement must be prepared by a licensed personal insolvency practitioner appointed by the debtor and the final arrangement must be approved by the debtor and—in terms of value—a qualified majority of creditors (DSA: 65 percent; PIA: 65 percent overall, as well as more than 50 percent of secured creditors and 50 percent of unsecured creditors). Upon application, a debtor will be granted a protective certificate against creditor enforcement actions for a 70-day period (with possible extension). The proposed procedures will require certain court involvement, such as court approval for the granting of the protective certificate and the approval of final

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[33] See Draft Scheme of the Personal Insolvency Bill.

[34] See Final Personal Insolvency Bill.

arrangements, based on submissions from the Insolvency Service. It is expected that the role of the courts will be essentially supervisory, but with the provision for objections by creditors. This approach will, however, have resource and organizational impacts on the courts.

The PIA is specifically tailored to facilitate resolution of mortgage distress for debtors that are cash-flow insolvent (i.e., unable to pay debts as they fall due), and may only be engaged in once. As the PIA deals with unsecured and secured debts, creditors' interests may differ, making it more challenging for the personal insolvency practitioner to find a solution acceptable to both the debtor and to most creditors. The aim is to resolve any unsecured debt over a period of normally six years and to restructure secured debt on a sustainable path thereafter. Where the PIA provides for sale of property the subject of security, the sale proceeds must be applied in satisfaction of the secured debt unless the relevant secured creditor agrees otherwise. Any shortfall upon such sale abates in equal proportion to the unsecured debts and is discharged with them on completion of the PIA. A PIA can include a range of mortgage restructuring options proposed in the report of the Inter-Departmental Mortgage Arrears Working Group, including split mortgages, mortgage-to-rent or trade-down (and other suitable solutions). Provisions are included for the protection of the family home unless the costs, accommodation etc. are disproportionately large, and there is no automatic write-down of secured claims. Loan principal cannot be reduced below the market value of the security (unless the relevant creditor agrees) and there will be a clawback for 20 years if the property is subsequently sold at a higher price.

The parliamentary discussions of the draft legislation are currently underway. Moreover, new infrastructure is required, including the Insolvency Service and the regime for licensing and monitoring of personal insolvency practitioners. It is expected that a Director-Designate will be appointed soon to head up the Insolvency Service.

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