



UNITED KINGDOM

SELECTED ISSUES

February 2016

This Selected Issues paper on the United Kingdom was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on February 1, 2016.

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International Monetary Fund
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SELECTED ISSUES

February 1, 2016

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European Department

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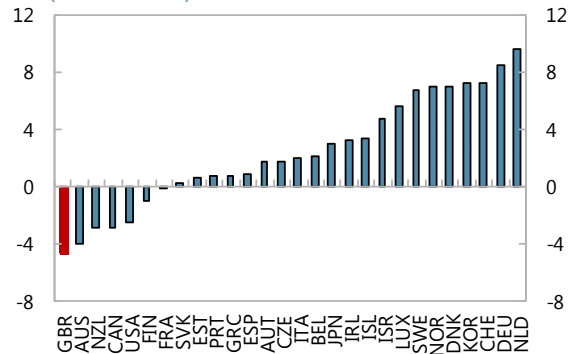
HOW MUCH OF A CONCERN IS THE UK'S CURRENT ACCOUNT DEFICIT? AN ASSESSMENT OF THE UK'S EXTERNAL POSITION¹

The UK's current account (CA) deficit stood at 5.1 percent of GDP in 2014, the largest in 50 years and the largest among advanced economies in 2014 as a percent of GDP.² This chapter looks at the reasons behind the widening CA balance, how it may evolve going forward, how it affects net investment positions, and to what degree one should be concerned about it.

A. Why has the current account balance declined and to what extent will it improve?

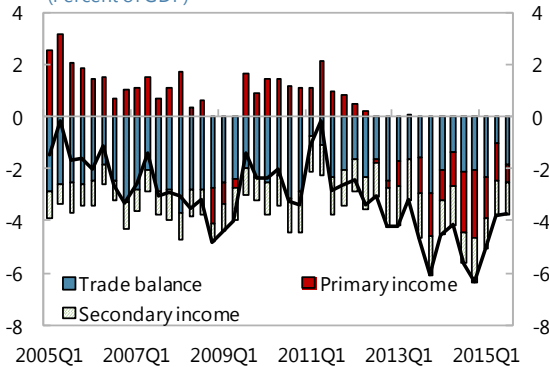
1. The income balance accounts for the recent deterioration. From 2011 to 2014, the CA deficit deteriorated from 1.7 percent of GDP to 5.1 percent of GDP. However, this decline was not due to the trade deficit, which worsened by only 0.3 percentage point (1.6 percent of GDP to 1.9 percent of GDP). Rather, the wider current account is explained by sharply lower net investment income, particularly from FDI.

UK: Current Account Balance, 2014
(Percent of GDP)



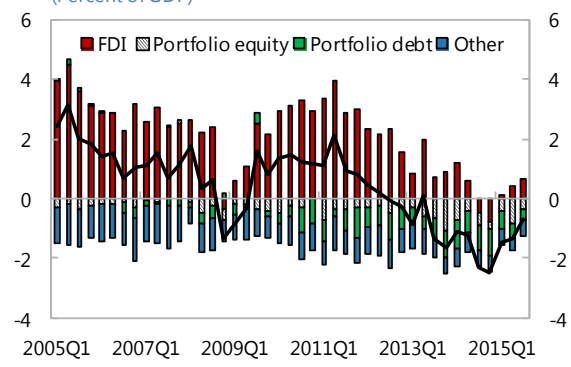
Source: WEO.

UK: Current Account Balance
(Percent of GDP)



Source: Haver Analytics.

UK: Net Investment Income
(Percent of GDP)



Source: Haver Analytics.

¹ Prepared by Anna Bordon (EUR).

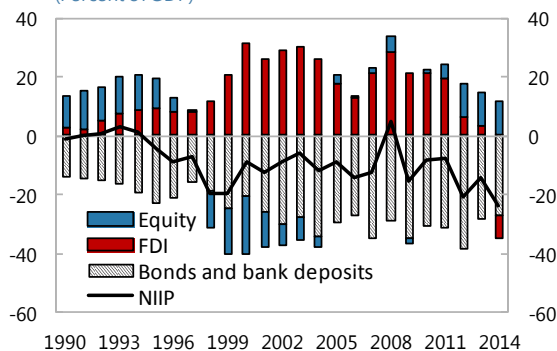
² BOP and IIP data are based on statistics released by the ONS on December 23, 2015. New and preliminary results of the annual FDI survey suggest that the current account deficit could be revised down to 4 and 4.5 percent of GDP in 2013 and 2014, respectively.

2. One reason for the drop in investment income is a shift in the UK's net investment position.

Net FDI has declined in recent years, while net portfolio equity has risen. This shift in the composition of net international investment matters because income flows from FDI tend to be higher than income flows from equity or debt.

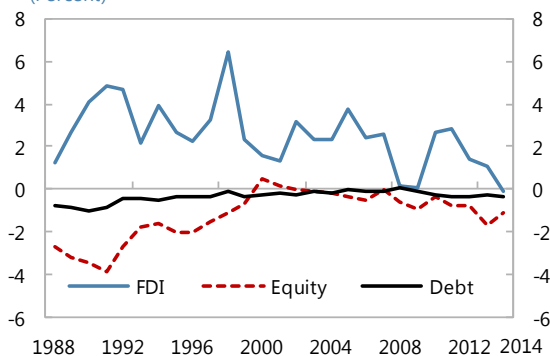
- Specifically, the average yield differential for FDI—computed from 1988 to 2014 as the ratio of income to the previous year's position of FDI assets and that of FDI liabilities and taking their difference—has been 2½ percent. The average yield differentials for equity and debt have been negative.

UK: Decomposition of the IIP
(Percent of GDP)



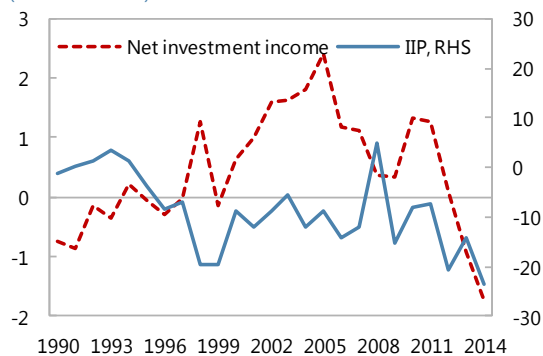
Source: Haver Analytics.

UK: Yield Differential for Net FDI, Equity, and Debt
(Percent)



Sources: ONS; IMF staff calculations.

UK: IIP and Net Investment Income
(Percent of GDP)



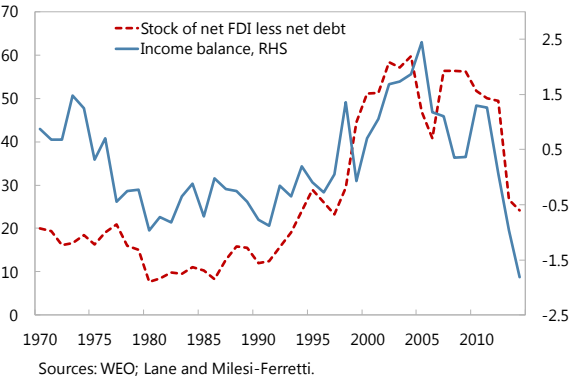
Source: Haver Analytics.

- Since UK residents' direct investment abroad earns more than nonresidents' investment in the UK,³ a positive net FDI position will result in a strong investment income balance. Indeed, this so-called "exorbitant privilege" helped the UK's CA balance in previous years. Consequently, the investment income balance stayed positive from 2000 to 2012—contributing an average of 1.1 percent of GDP to the CA balance—even while the international investment position (IIP), except for 2008, was negative.

³ Several reasons have been put forward to explain this result: (1) foreign investment consists of new firms that have lower returns due to inexperience or high initial expenses; (2) investment excludes intangible capital; (3) tax issues; and (4) compensation for risk of investing in countries with low sovereign credit rating. See Curcuru and Thomas (2012).

- This is also reflected in the positive relationship between the income balance and the difference between the net FDI and net debt positions. An increase in the income balance in the late 90s coincided with rising net FDI less net debt, and the recent deterioration is consistent with declining net FDI less net debt.

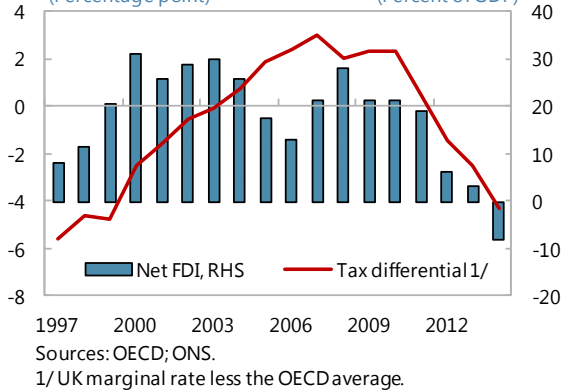
UK: Income balance and Stock of Net Foreign Assets
(Percent of GDP)



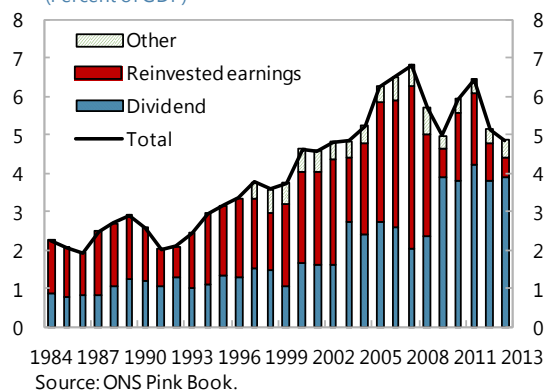
3. Changes in the UK’s corporate tax system and asset sales may partly explain the shift in the UK’s net investment position. The

UK’s marginal tax rate has declined from 30 percent in 2007 (OECD average: 27 percent) to 21 percent in 2015 (OECD average: 25 percent), making the UK a more attractive place to invest.⁴ In addition, the UK also moved from a worldwide to territorial system of corporate taxation in 2007.⁵ This change may have led UK investors abroad to repatriate earnings that used to be reinvested abroad. Since reinvested earnings are accounted for in the balance of payments as outward FDI (as well as income inflow), the shift to repatriation would have reduced the stock of FDI abroad. In addition, in 2014, Vodafone cut its size in half by disposing its Verizon stake, amounting to more than 3 percent of GDP.

UK: Relative Corporate Tax Rates and FDI
(Percentage point) (Percent of GDP)



UK: FDI Income of UK Residents
(Percent of GDP)



⁴ Lane (2015), on the other hand, suggests that UK-based multinational firms have transferred their head offices to lower tax jurisdictions, causing the FDI assets of these firms abroad to drop out of the IIP. Resident shareholders’ foreign assets rise but in the form of portfolio equity.

⁵ Worldwide taxation is a system under which corporations are taxable on income from all over the world. Territorial taxation is a system where income is taxed only at the host country and corporations do not incur any liability in their home country. See Matheson and others (2013).

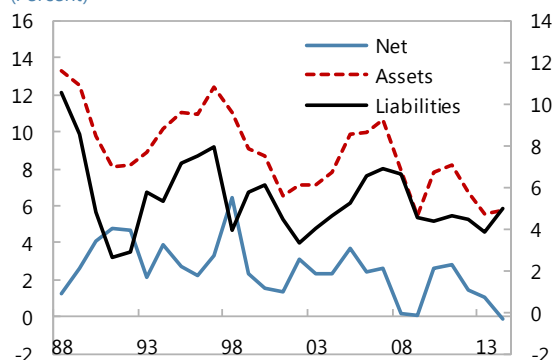
4. Another reason for the worsening investment income balance is a decline in the returns of FDI. Nominal yields of FDI averaged 8.0 percent for assets and 5.9 percent for liabilities during 2001–10, resulting in a differential of 2.1 percent. In 2014, the differential was down to -0.1 percent.

5. Global cyclical factors could explain part of the decline in net returns.

- *Stronger growth in the UK than abroad.* Growth in the UK has exceeded that of major partner countries in recent years, supporting higher returns on foreigners' investments in the UK than on UK investments in other countries. A geographic breakdown of assets and earnings reveals that returns from several destination regions have been declining. Returns are lowest in Europe, the location of more than 50 percent of investment abroad and a region where economic growth has been weak in recent years. However, tax optimization strategies by multinational companies could obscure the ultimate destinations of these investments.⁶

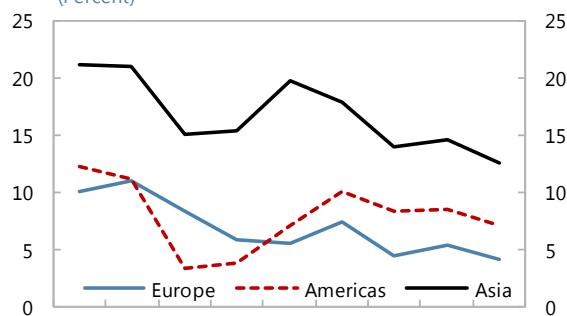
- *Sectoral cycles.* A sectoral breakdown of net FDI earnings by the UK's Office for National Statistics (2015) reveals that the largest change in net earnings came from industries engaged in production, particularly mining and quarrying. This

UK: Nominal Yields of FDI (Percent)



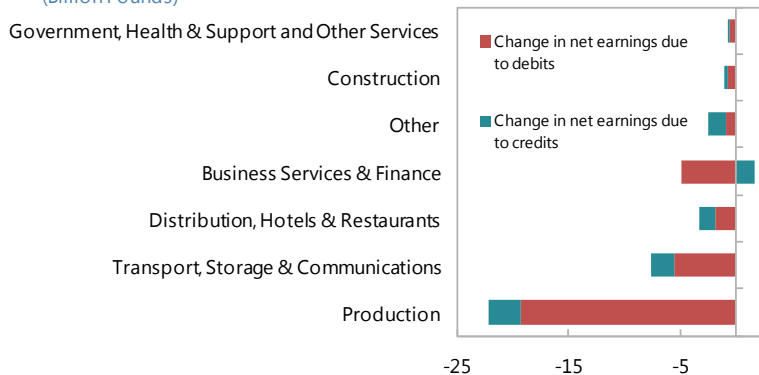
Sources: ONS; IMF staff calculations

UK: Returns of FDI Assets, by Destination (Percent)



2006 2007 2008 2009 2010 2011 2012 2013 2014
Sources: Annual Foreign Direct Investment Survey, ONS; IMF staff calculations.

UK: Change in Net FDI Earnings, 2011-2014 (Billion Pounds)



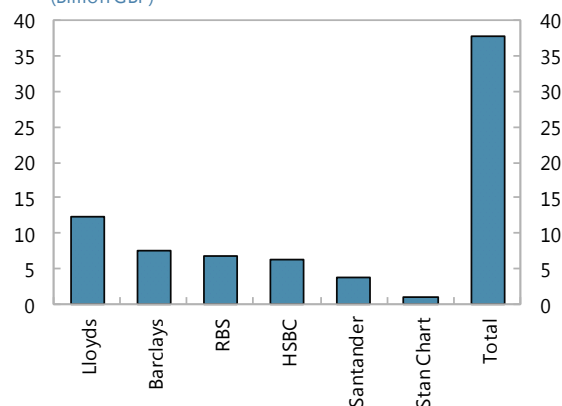
Sources: Annual Foreign Direct Investment Survey, Office for National Statistics (2015).

⁶ Experimental statistics by the ONS (Hamroush and others, 2015) reveal that Luxembourg and the Netherlands, two important FDI partners, are not the ultimate destination of 42 percent of UK assets in these countries.

suggests that lower commodity prices may have also contributed to lackluster income from FDI—although this would only explain the deterioration in 2014, particularly in the second half of the year when commodity prices (especially oil) started declining significantly.

6. Conduct fines paid by UK banks to foreign regulators may have contributed to the worsening income balance, but this effect appears modest. These charges encompass allegations of foreign exchange manipulation, LIBOR manipulation, mis-selling of mortgage-backed securities before the crisis, mis-selling of interest-rate hedging products, and money laundering. Conduct costs are estimated to be around £38 billion from 2010–2014 (see chart). However, around £26 billion were compensation of customers for mis-selling payment protection insurance. As these were paid largely to residents, the overall conduct fines paid to nonresidents likely amount to at most £12 billion over 5 years—an average of £2.4 billion per year, or only 0.1 percent of 2014 GDP. Going forward, these fines are expected to fall.

UK: Conduct Fines, 2010-14
(Billion GBP)



Source: CCP Research.

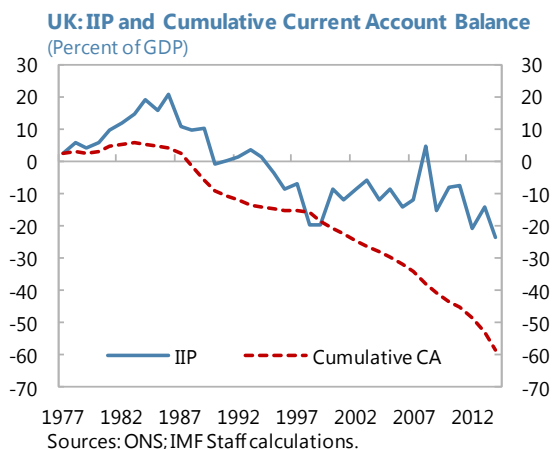
7. The income balance is expected to rise as the world economy improves, but it is unlikely to go back to previous levels.

- Returns are expected to recover, but the net stock of FDI—which is likely driven by more permanent shifts—is expected to remain low.
- Assuming the same levels of FDI assets and liabilities as in 2014 (67.5 percent of GDP and 75.7 percent of GDP, respectively), a recovery of net yields back to pre-crisis levels of 2.1 percent would raise the income balance by 0.9 percentage point of GDP. This would lift the balance from -1.2 percent of GDP in the first three quarters of 2015 to -0.3 percent of GDP.
- This is a somewhat stylized example—in reality, net yields may not fully revert, and the stocks may partially revert. But as an approximation, such a result—a partial recovery of net income flows on the order of 1 percentage point of GDP—seems plausible.⁷

⁷ This conclusion is also supported by regression analysis of UK income inflows and outflows. The author can be contacted for further details.

B. How has the current account balance affected the IIP, and how is the IIP likely to evolve?

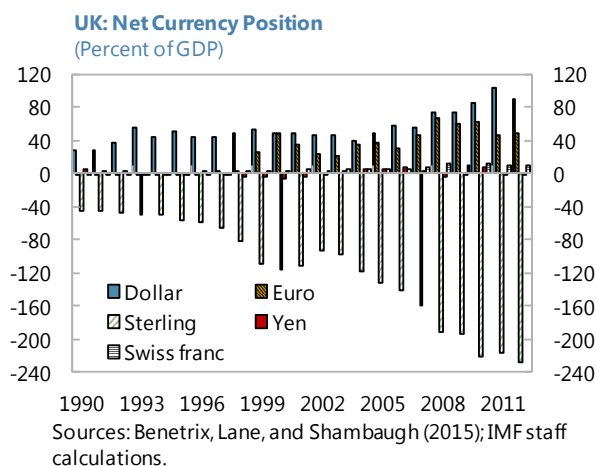
8. Breaking from the past, the recent worsening of the CA balance is reflected in the IIP. Since 1999, the IIP and cumulative CA have diverged. While the CA continued to run deficits, the IIP remained steady during the 2000s due to positive valuation effects. Starting in 2012, however, the IIP started deteriorating, reaching its lowest point of -25 percent of GDP at end-2014, even as it remains higher than the cumulative current account.⁸



9. Weak growth in host countries might partly explain flagging valuation effects. Weak partner country growth could have reduced capital gains on investments. Indeed, the decline in valuation effects coincides with large write-offs in the telecom sector in 2012 following heavy losses in southern Europe.⁹

10. Currency movements could also have played a modest role in explaining valuation effects.

- Estimates of the net currency positions of several countries from 1990 to 2012 by Benetrix, Lane, and Shambaugh (2015) reveal that the UK's external assets have a higher foreign-currency component than do the UK's external liabilities. Consequently, sterling appreciation reduces the IIP via valuation effects.
- In 2012, the IIP's net exposure to currency movements amounted to 90 percent of GDP for the U.S. dollar—implying that a 10 percent appreciation of sterling relative to the U.S. dollar, holding all other bilateral rates with sterling constant, would generate a 9 percentage point reduction of the IIP—and 48 percent of GDP for the euro.

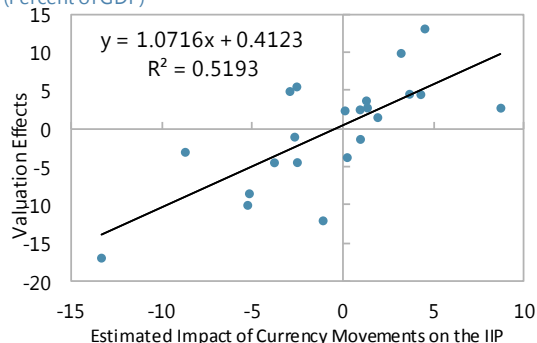


⁸ [Bank of England estimates](#) suggest that the IIP would be stronger if FDI were measured at market prices, though it is difficult to measure this precisely.

⁹ See "Vodafone in £6 billion Europe writedown" <http://www.ft.com/intl/cms/s/0/44ca6e8a-2d69-11e2-9988-00144feabdc0.html#axzz3pJasF5O>

- A scatter plot of actual IIP valuation changes against estimated valuation effects resulting from actual exchange rate movements of sterling relative to the USD, euro, yen, and Swiss franc suggests that currency movements do help explain the size of valuation effects from 1990 to 2012 (text chart).
- Thus, sterling appreciation against the dollar by around 3½ percent from 2012–14 could partly explain lower valuation effects during this period, more than offsetting the 4¾ percent depreciation against the euro, given that the exposure to the U.S. dollar is nearly twice as large as that to the euro. However, the net effect would still be modest.

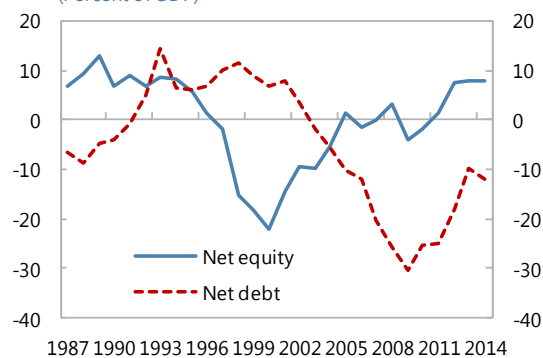
UK: Currency Movements and Valuation Effects, 1990-2012
(Percent of GDP)



Sources: Benetrix, Lane, and Shambaugh (2015); IMF staff calculations.

11. The likely evolution of the IIP over the medium term is uncertain. Downward pressure from a negative CA balance is projected to continue, but diminish as the current account gradually improves. In addition, as cyclical factors wane, more profitable investments are expected to boost valuation effects. The composition of the IIP also remains favorable to strong asset price valuation effects: net portfolio equity positions—where the potential for capital gains is higher than for debt—have remained positive, and net portfolio debt positions—largely fixed income—have remained negative.

UK: Portfolio Investment
(Percent of GDP)



Source: ONS.

C. Implications for the external assessment

12. Adjusting for cyclical factors in the income balance, the IMF's External Balance Assessment (EBA) models estimate that sterling is moderately overvalued in 2015.¹⁰ The 2015 CA balance is projected at -4.1 percent of GDP. If cyclical factors are removed, the EBA model estimates that the trade balance would improve by 0.3 percent of GDP. Based on the analysis above, staff estimates that the income balance will also improve by another 1 percent of GDP as cyclical conditions outside the UK improve. The underlying CA balance is therefore estimated at -2.8 percent of GDP. The EBA-estimated CA norm for the UK of -0.3 percent of GDP thus suggests a CA gap of

¹⁰ See Phillips and others (2013) for a discussion of the models on external assessment.

2.5 percent of GDP. Applying an elasticity of -0.23 (for the relationship between the current account and exchange rate) yields exchange rate overvaluation of 11 percent. The EBA REER index and levels regression estimate sterling overvaluation of 12 and 10 percent, respectively. Taking an average of these approaches and allowing for uncertainty suggests sterling overvaluation in 2015 of about 5–15 percent.

13. Among the identified policy gaps, the fiscal gap explains a large part of the overvaluation. Indeed, breaking down the CA balance by sectors reveals that the government accounts for most of the deficit. This lends supports to current efforts to continue the fiscal adjustment. However, the private sector is also increasingly contributing to the deficit, with households' saving-investment balance turning negative in 2013.

D. To what degree is the current account gap a cause for concern?

14. The floating exchange rate regime should help ease any adjustment. Even if the income balance improves as cyclical factors diminish, some adjustment in the trade balance is likely to be necessary to close the CA gap. Event studies have shown that current account adjustments are often accompanied by slower GDP growth and increasing unemployment (Freund and Warnock, 2007), as reduced capital inflows depress domestic investment and consumption. However, adverse effects on growth tend to be less pronounced when the exchange rate is allowed to adjust.

15. The currency composition of the IIP amplifies the benefits of sterling depreciation. Given estimates that the UK has more liabilities than assets denominated in sterling and more assets than liabilities denominated in foreign currency, a depreciation would not only improve the trade balance through expenditure switching and reduction but also boost the income balance and IIP through valuation effects.

16. The credibility of the inflation targeting framework also minimizes the cost of adjustment on growth. Anchored inflation expectations should help the BoE look through the impact of a large depreciation on inflation. This would reduce the need to raise policy rates that would slow growth.

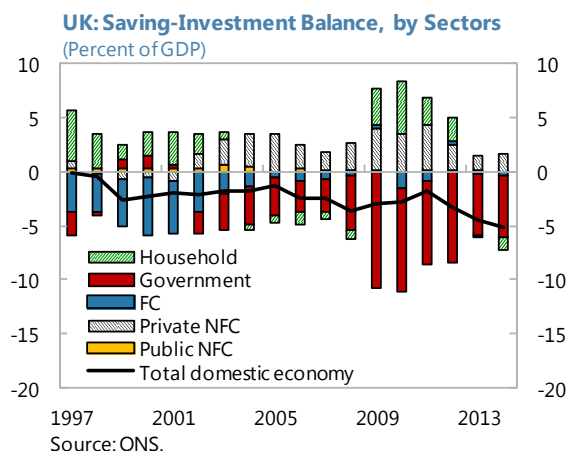
17. Finally, while the CA deficit has grown, financing has become more stable. FDI has been increasingly funding the deficit. This has not always been the case. The deficit was financed largely

UK: Estimated Exchange Rate Overvaluation under Different EBA Approaches

| Approach | Overvaluation (percent) |
|--|-------------------------|
| Adjusted Current Account Regression 1/ | 11 |
| REER models | 11 |
| REER Index Regression | 12 |
| REER Level Regression | 10 |
| Average | 11 |

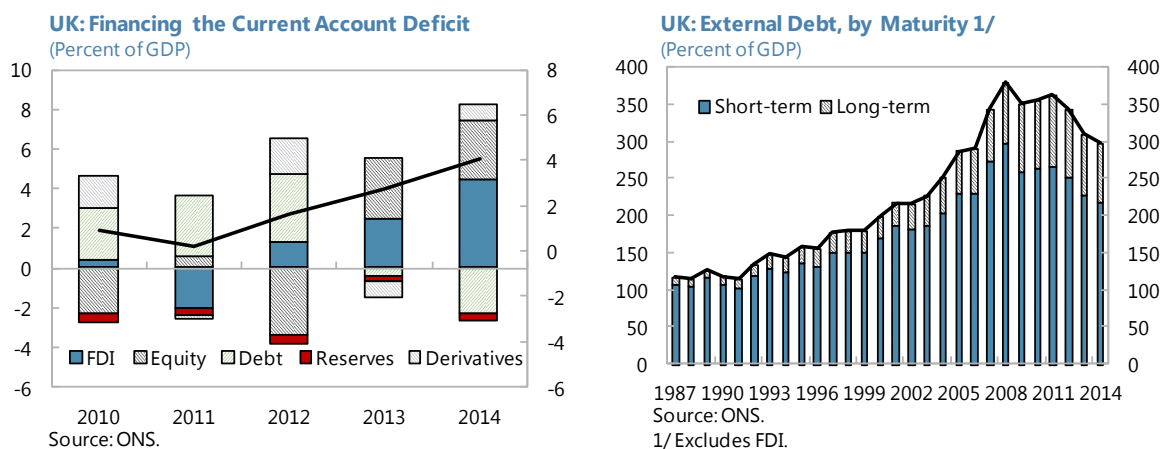
Source: IMF staff calculation.

1/ Adjusted for cyclical factors. Uses an elasticity of -0.23.



by net debt prior to 2013, which is merely the flipside of the high income balance and capital gains that the UK enjoyed prior to 2012. Being long on (riskier but higher-yield) FDI but short on (safer but lower-yield) portfolio debt resulted in larger income flows, but also a higher risk of capital outflows. This situation reversed beginning in 2012: income flows have declined but financial inflows have stabilized.

18. Nonetheless, despite rising FDI and declining debt inflows, the current stock of external liabilities remains largely short term. Noting that short-term liabilities (mainly bank deposits) now are much larger than prior to the 1976 crisis, Broadbent (2014) has stressed the importance of institutional and policy credibility that are now in place.



E. Conclusion

19. The UK's CA deficit is explained by temporary as well as more permanent factors. The CA deficit widened as a result of a deteriorating income balance. The income balance has declined as a result of lower returns from foreign direct investment in weak host country economies and a reduction of net FDI assets. While the former is expected to unwind as partner economies strengthen, the latter appears to be driven by more structural shifts in the economy, such as the reduction in corporate tax rates in the UK.

20. A number of factors mitigate risks from the CA deficit, but its large size nonetheless warrants monitoring. As mentioned above, some of the factors driving the CA deficit are expected to unwind. In addition, the currency composition of the balance sheet, the relatively high credibility of the monetary policy and exchange rate framework, and the increased stability of recent financing reduce risks from large and sudden adjustments. Nonetheless, the deficit is large by historical standards, and staff evaluates sterling to be moderately overvalued, even after removing cyclical factors that are temporarily reducing the income and trade balances. Hence, policies that facilitate current account adjustment, such the current mix of a tight fiscal and loose monetary stance, will be helpful.

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A FIRM-LEVEL ANALYSIS OF LABOR PRODUCTIVITY IN THE UNITED KINGDOM¹

This chapter analyzes the post-recession labor productivity slowdown in the UK using firm-level data. Growth accounting suggests that the main cause of the slowdown was a broad-based decline in total factor productivity (TFP), while lessened capital accumulation has not played a major role. The TFP decline may be partly due to increased resource misallocation, which contributed approximately two-fifths of a percentage point annually to the slowdown, but this result is not highly robust.

A. The United Kingdom Productivity “Puzzle”

1. This chapter presents a quantitative assessment of three common conjectures about slow labor productivity growth in the UK in recent years. The average annual growth of output per worker in the UK dropped from almost 2 percent during 2000–08 to nearly zero during 2009–14. We analyze three common explanations of this slowdown.²

- *Hypothesis 1:* Capital deepening slowed—i.e., the increased cost of capital relative to the cost of labor caused capital investment to slow, which in turn reduced labor productivity growth.
- *Hypothesis 2:* Productivity growth slowed because of increased misallocation of resources, which resulted in part from increased financial frictions and impaired credit channels following the crisis.
- *Hypothesis 3:* The slowdown in productivity reflects a broad-based decline in TFP across sectors and firms due to factors other than resource misallocation. Such a slowdown could reflect a number of factors, including some combination of a broad-based slowdown in technological innovation (as in many other advanced economies), under-measurement of output, and changes in the skill composition of the labor force. However, disentangling a broad-based TFP decline into these underlying factors is beyond the scope of this chapter.

2. We use firm-level panel data to assess if and how much each of the proposed mechanisms contributes to the productivity slowdown. The analysis of resource misallocation and the decomposition of changes in productivity to those between and within firms can only be conducted with firm-level data. Since firm-specific factors (e.g., size and age) affect productivity, relying on aggregate data would also restrict the scope of the analysis and preclude the use of variation in productivity across firms. Hence, we use firm-level data from ORBIS, which contains annual data on firms’ income statements, balance sheets, employment, location, ownership, and legal information in more than one hundred countries (see Appendix II for further details).

¹ Prepared by Mico Mrkaic (EUR).

² Appendix I briefly reviews the relevant literature.

3. We find support for a broad-based decline in total factor productivity, perhaps due in part to increased resource misallocation. Growth accounting analysis finds that the main factor in the productivity decline was a sharp decline in TFP growth, with slower capital deepening playing little role. We also find evidence that the TFP growth slowdown was due in part to increases in resource misallocation, but this result is sensitive to the choice of the analyzed time period. In addition, in what is to our knowledge the first analysis of its kind, we compare the pre-recession and post-recession levels of resource misallocation in the UK to the average across European G7 countries (France, Germany, and Italy) and show that the recession-induced misallocation in the UK persisted longer than the average across these comparator countries.

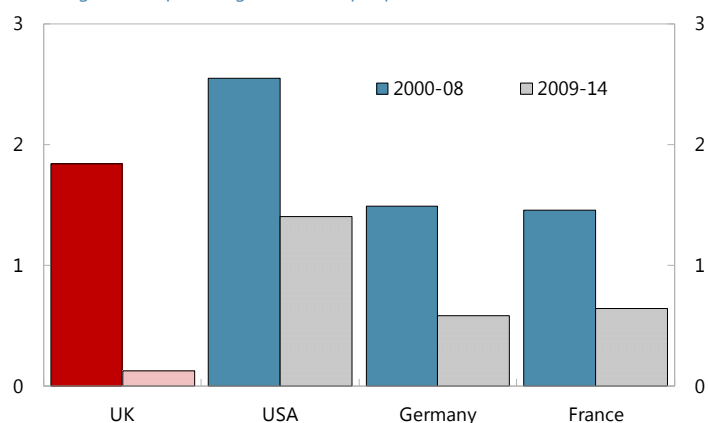
4. The remainder of this chapter is structured as follows. In the second section, we present some key facts about UK productivity and compare them to those in other advanced economies to highlight the puzzling nature of the UK productivity slowdown. In the third section, we present the analytical machinery used to analyze the issue. Specifically, we focus on the key elements of the seminal Hsieh-Klenow (2009) paper, which is the foundation of our analysis of resource misallocation. The section also presents the results of a growth accounting exercise for the UK and assesses the productivity impact of resource misallocation in the UK. Finally, the section compares resource misallocation in the UK to that in European G7 economies. The fifth section summarizes the results.

B. Some Key Facts about UK Productivity

5. Productivity growth in the UK has been exceptionally weak since the onset of the great recession. After the great recession, productivity growth declined in all major economies. However, despite seemingly similar economic conditions, productivity growth in the UK declined considerably more than in comparable advanced economies. Measured by output per hour, average annual productivity growth declined from 1.8 percent during 2000–08 to nearly zero during 2009–14 and started accelerating only recently.

The decline in the growth of output per worker was smaller, but still sizeable at 1.3 percent. Comparing more broadly, during 2007–12, of all OECD member countries, only Greece and Luxembourg had slower productivity growth than the UK.

Productivity Slowdown in Selected Major Economies
(Average annual percent growth in output per hour)



Sources: Haver Analytics and IMF staff calculations.

6. Labor productivity in the United Kingdom is not only growing slowly, but the level of productivity is also below that in the most productive advanced economies. In 2012, the hourly output of an average UK worker was ten percent below the G7 average, about fifteen percent below French and German averages, and a quarter lower than in the US.³ If measured by output per worker, UK productivity is closer to that in its European peers, but nearly thirty percent behind that in the US. These statistics suggest that TFP in the UK is lower than in the economies that are closer to the productivity frontier.

C. Empirical Analysis

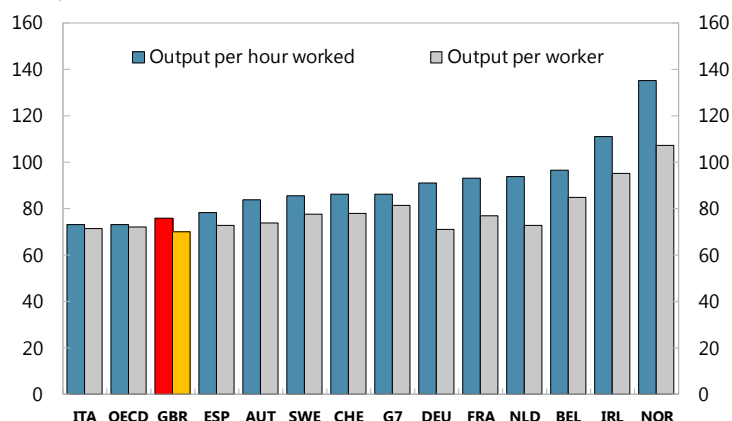
The Analytical Framework

7. The analysis proceeds in two stages: first, we decompose productivity growth into the contributions of TFP and capital deepening; second, we estimate the reduction in TFP due to resource misallocation.

- In the first stage, we assess the connection between labor productivity, TFP growth, and capital deepening by conducting a sectoral growth accounting exercise. We aggregate firm-level capital, employment, and output across each sector of the economy and compute the contributions of sectoral TFP to sectoral productivity growth. To further analyze the drivers of productivity growth, we run several sets of regressions of TFP growth and capital deepening on their lagged values and on other explanatory variables.
- In the second stage, we calculate by how much resource misallocation impeded TFP growth and study how the misallocation varies with time and across industries and firm sizes. The analysis of resource misallocation is based on the seminal paper by Hsieh and Klenow (2009). They use the variability of TFP within a sector as a proxy for resource misallocation and show how resource misallocation affects aggregate sectoral and economy-wide TFP levels. Their approach can be illustrated with the following example. Suppose there are two firms, one of which faces a distortion, such as capital subsidies, that causes the marginal products of capital to differ between the firms. If we remove the distortion and allow capital to move to equalize the marginal products of capital for both firms, the TFP of this two-firm industry increases—after the distortion is removed, firms produce more with the same inputs. This example illustrates an

Labor Productivity Levels in 2012

(percent of US levels)



Sources: OECD and IMF staff calculations.

³ 2012 is the last year for which the OECD disseminates internationally comparable labor productivity statistics.

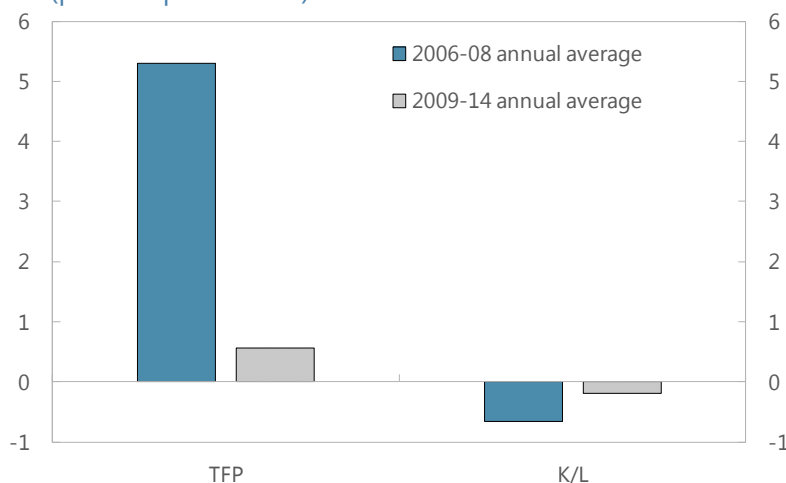
important general result—the variability of marginal products *within* a sector (i.e., resource misallocation) is inversely proportional to the aggregate TFP *of the sector*.

Growth Accounting Analysis

8. To determine the drivers of labor productivity growth, we conduct a growth accounting exercise. For each year in 2005–14 we sum firm-level real outputs, capital stocks, and employments to obtain sectoral aggregates. Next, we compute the average labor productivity and capital intensity in each sector for each year. In the last step, we decompose the growth in sectoral labor productivity into the contributions of capital deepening and TFP growth and compare the contributions to productivity growth for the pre-recession and post-recession periods.

9. TFP declines are the main cause of weaker productivity growth while slower capital deepening contributed only marginally. Between periods 2006–08 and 2009–14, the average annual contribution of TFP growth to aggregate labor productivity growth declined from 5 to $\frac{1}{2}$ percent.⁴ During the same time, the contribution of capital deepening increased marginally, from -0.7 to -0.2 percent. We conclude that the productivity growth slowdown was mainly driven by a sharp drop in TFP growth, while acknowledging that measurement error implies some uncertainty around the precise estimates. At a sectoral level, we obtain compatible results—TFP contributions to growth declined in all sectors after the Great Recession (Table 1).

UK: Contributions to Labor Productivity Growth
(percent per annum)



Sources: ORBIS database and IMF staff calculations.

⁴ The estimates obtained from a firm-level exercise do not necessarily match aggregate values from published sectoral databases because ORBIS includes only a subset of all firms in the economy. However, what matters is the relative importance of the estimated contributions of TFP and capital deepening. The relative contributions strongly support the view that the productivity slowdown was mainly caused by the slowdown in the growth of TFP.

**Table 1. United Kingdom: TFP and Capital Deepening:
Annual Contributions to Growth (percent)**

| | TFP | | | Capital Deepening | | |
|--|-------------|--------|--------|-------------------|--------|--------|
| | Period Mean | | Change | Period Mean | | Change |
| | '06-08 | '09-14 | | '06-08 | '09-14 | |
| Manufacturing | 6.1 | 0.9 | -5.2 | -0.4 | -0.5 | 0.0 |
| Electricity, gas, steam and air conditioning | 19.6 | 3.2 | -16.4 | -22.1 | 3.2 | 25.2 |
| Water supply; sewerage, waste management | 7.9 | -1.6 | -9.5 | -0.1 | -1.4 | -1.3 |
| Construction | 1.9 | 1.7 | -0.2 | -0.8 | 0.3 | 1.1 |
| Wholesale and retail trade; repair | 4.0 | 1.4 | -2.6 | 0.3 | -0.3 | -0.6 |
| Transportation and storage | 5.0 | 1.4 | -3.6 | -0.7 | 0.3 | 1.0 |
| Accommodation and food service activities | 4.9 | 1.5 | -3.4 | -0.5 | 0.8 | 1.4 |
| Information and communication | 3.5 | 1.3 | -2.1 | 0.7 | -0.2 | -0.9 |
| Financial and insurance activities | 4.6 | -0.9 | -5.5 | -3.8 | 1.4 | 5.2 |
| Real estate activities | 6.0 | -2.6 | -8.6 | -8.5 | 7.3 | 15.7 |
| Professional, scientific and technical services | 9.3 | 0.9 | -8.5 | 0.3 | -0.7 | -0.9 |
| Administrative and support services | 4.9 | -1.0 | -5.9 | -0.6 | -1.8 | -1.2 |
| Public administration and defense; compulsory social security | 14.3 | -5.9 | -20.2 | 0.0 | 2.7 | 2.7 |
| Education | 6.3 | -0.4 | -6.7 | 0.6 | 0.2 | -0.4 |
| Human health and social work activities | 4.6 | -1.9 | -6.5 | 1.2 | -0.5 | -1.7 |
| Arts, entertainment and recreation | 2.7 | 1.5 | -1.2 | 0.0 | 0.2 | 0.2 |
| Other service activities | 5.2 | -1.0 | -6.2 | -0.9 | -0.5 | 0.4 |
| Weighted average over all sectors | 5.3 | 0.6 | -4.7 | -0.7 | -0.2 | 0.5 |

Sources: ORBIS database and IMF staff calculations.

10. TFP shows a tendency to converge to the productivity frontier and depends on firm size; capital deepening shows similar tendencies. To analyze the factors that drive TFP growth, we run several regressions of TFP growth on plausible explanatory variables, with a special focus on convergence to the UK TFP productivity frontier (Appendix III).⁵ To check the robustness of results, we add several sets of dummies to account for differences in sectors, regions, firm size, and time. Results show robust convergence of TFP to the frontier (firms that are farther from the frontier grow faster). We also find effects of firm size on the rate of TFP growth, with TFP growth being faster in smaller firms. Estimation results for capital deepening are qualitatively the same as those for TFP growth.

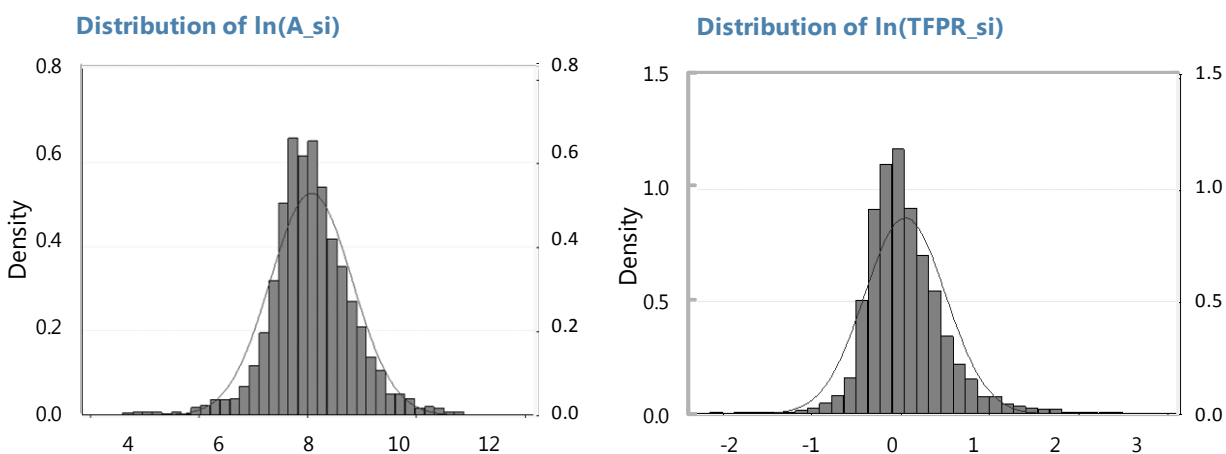
⁵ The TFP frontier is defined as the top one percent within each sector.

Resource Misallocation

11. The magnitude of resource misallocation is proportional to the variance of TFP under quite general assumptions. Hsieh and Klenow show that the logarithm of actual sectoral TFP, TFP_s , can be decomposed into the weighted difference between the logarithm of the “clean” TFP that would exist in a sector with no distortions and a measure of resource misallocation:

$$\ln TFP_s = \ln A_s - \frac{1}{2}\sigma \text{var}(\ln TFPR_{si})$$

where σ is the price elasticity of demand and “clean” TFP is A_s . Resource misallocation is given by the variance of the logarithm of $TFPR_{si}$ where $TFPR_{si}$ is the total factor revenue product of firm i in sector s . This decomposition holds if TFP_s and $TFPR_{si}$ are jointly lognormally distributed. This assumption is supported at least approximately, as can be seen from the sample histograms.⁶ This fact simplifies the analysis and permits formal statistical testing of changes in allocative efficiency by means of standard variance ratio tests.



Sources: ORBIS database, IMF staff calculations.

12. We estimate that increases in resource misallocation depressed productivity growth by about 0.4 percentage points per year after the Great Recession, but this estimate is sensitive to the choice of time period. Table 2 shows sectoral estimates of average annual growth of resource misallocation for two periods: 2008–14 and 2009–14. The average annual growth rates of resource misallocation differ between the two periods, depending on the inclusion of the first crisis year, 2008. This finding stems from the fact that the main increase in resource misallocation was rapid and occurred mostly in 2008, followed by more moderate increases in subsequent years. Given this sensitivity, the annual aggregate effect of resource misallocation on post-recession productivity

⁶ Following Hsieh and Klenow, we remove the top and bottom one percent of the tails to lessen the influence of coding errors and extreme outliers.

growth is between -0.1 and 0.4 percent per year. There exist large differences between sectors in the degree of misallocation. Unsurprisingly, financials suffered a large increase in misallocation, while some (mostly public) sectors actually reduced their misallocation (e.g., education and health and human services). Overall, we estimate that, post-recession, the level of aggregate TFP was lower by about 3 percent due to increased misallocation. Further assuming that increased misallocation lasts approximately six years, it follows that it contributed approximately 0.5 percentage points per year (i.e., about a third of the slowdown in the measured growth of output per worker) to the post-recession slowdown.⁷

Table 2. United Kingdom: The TFP Impact of Resource Misallocation (percent) 1/

| | 2009-14 average | 2008-14 average | Midpoint estimate |
|---|--------------------|--------------------|----------------------|
| Manufacturing | -0.6 | 1.4 | 0.4 |
| Electricity, gas, steam and air conditioning | 3.3 | 3.2 | 3.3 |
| Water supply; sewerage, waste management | 0.3 | 3.8 | 2.0 |
| Construction | 0.8 | 0.8 | 0.8 |
| Wholesale and retail trade; repair | 0.1 | 1.2 | 0.7 |
| Transportation and storage | 0.7 | 0.1 | 0.4 |
| Accommodation and food service activities | 3.9 | 4.8 | 4.3 |
| Information and communication | 0.6 | 1.6 | 1.1 |
| Financial and insurance activities | 0.3 | 2.0 | 1.1 |
| Real estate activities | -1.6 | 0.5 | -0.6 |
| Professional, scientific and technical services | 0.3 | 2.0 | 1.1 |
| Administrative and support services | -0.1 | -0.1 | -0.1 |
| Public administration and defense; compulsory social security | -10.3 | -22.0 | -16.2 |
| Education | -7.8 | -5.9 | -6.9 |
| Human health and social work activities | -7.0 | -6.1 | -6.6 |
| Arts, entertainment and recreation | -4.1 | -6.5 | -5.3 |
| Other service activities | -2.9 | -1.5 | -2.2 |
| Weighted sum of TFP impacts | -0.2 | 0.9 | 0.4 |

1/ Resource misallocation impact is measured as the average annual growth rate of $\sigma \cdot \text{variance of } \ln(\text{TFPR}_{s,t})/2$

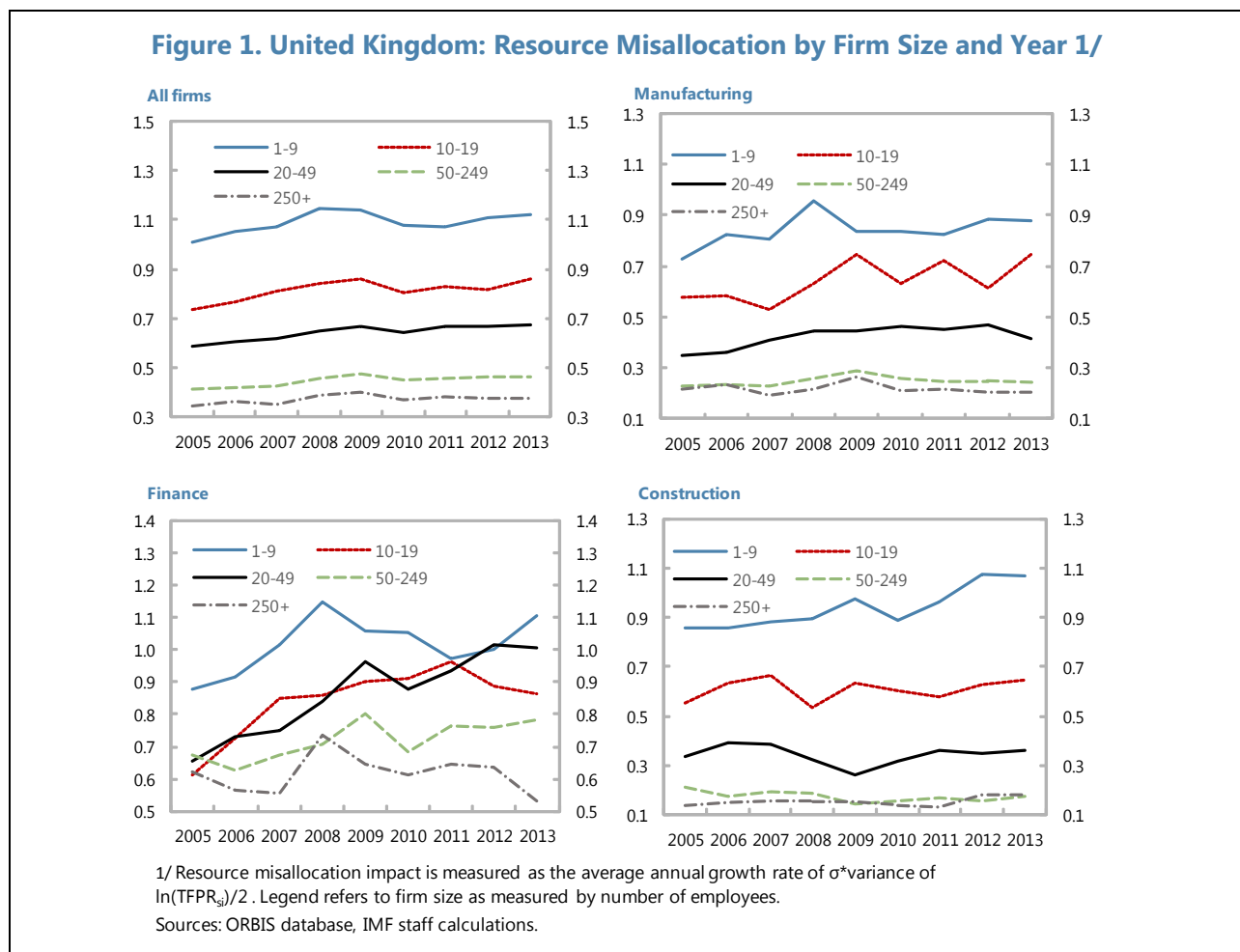
Sources: ORBIS database and IMF staff calculations.

13. Smaller firms suffer from more resource misallocation. The level of misallocation in micro firms (1–9 employees) is about three times greater than in large firms. In addition, after the

⁷ Our result is in broad agreement with Bank of England Working Paper No. 495: “The productivity puzzle: a firm-level investigation into employment behavior and resource allocation over the crisis” (Barnett and others). The paper finds that resource reallocation slowed significantly after the recession and that approximately one-third of the slowdown can be attributed to resource misallocation.

recession, misallocation in small firms increased three times as much as in large firms. This result supports the anecdotal evidence that smaller and medium-size enterprises suffered disproportionately during the recession because they were subject to stronger financial frictions, most likely due to their higher reliance on collateral.⁸

14. The evolution of resource misallocation over time differs across sectors. For the economy as a whole, the misallocation peaked at the onset of the recession (Figure 1). The behavior is different in some specific sectors. For example, the trajectories and relative magnitudes of misallocation fit the anecdotal evidence of persistent distress in small construction firms, large reallocation in finance, and a relatively placid picture for the manufacturing sector.



⁸ It is straightforward to demonstrate that financial frictions map directly into the Hsieh-Klenow framework of resource misallocation by imposing a credit constraint of the form $w \cdot L_{si} + \zeta \cdot R \cdot K_{si} < W(z_{si}, \eta)$. Here ζ is the amount of capital expenses that can serve as collateral, z_{si} is a vector of firm characteristics, and η characterizes the financial system.

Comparing Resource Misallocation in the UK with European G7 Economies

15. An elevated level of resource misallocation persisted longer in the UK than in other European G7 economies among smaller firms. Comparing the UK to other European G7 economies shows that the misallocation in the UK persisted longer after the onset of the recession among smaller firms, while large UK firms fall within the G7 misallocation range. Figure 2 shows the results of the comparison. We observe that the G7 range of misallocation, presented with vertical shaded bars, is relatively large. It is also interesting to note the heterogeneity of misallocation in the G7 countries across firm sizes. This differential response in resource misallocation indicates that the conditions of micro and small firms might be responsible for the larger-than-average UK productivity slowdown.

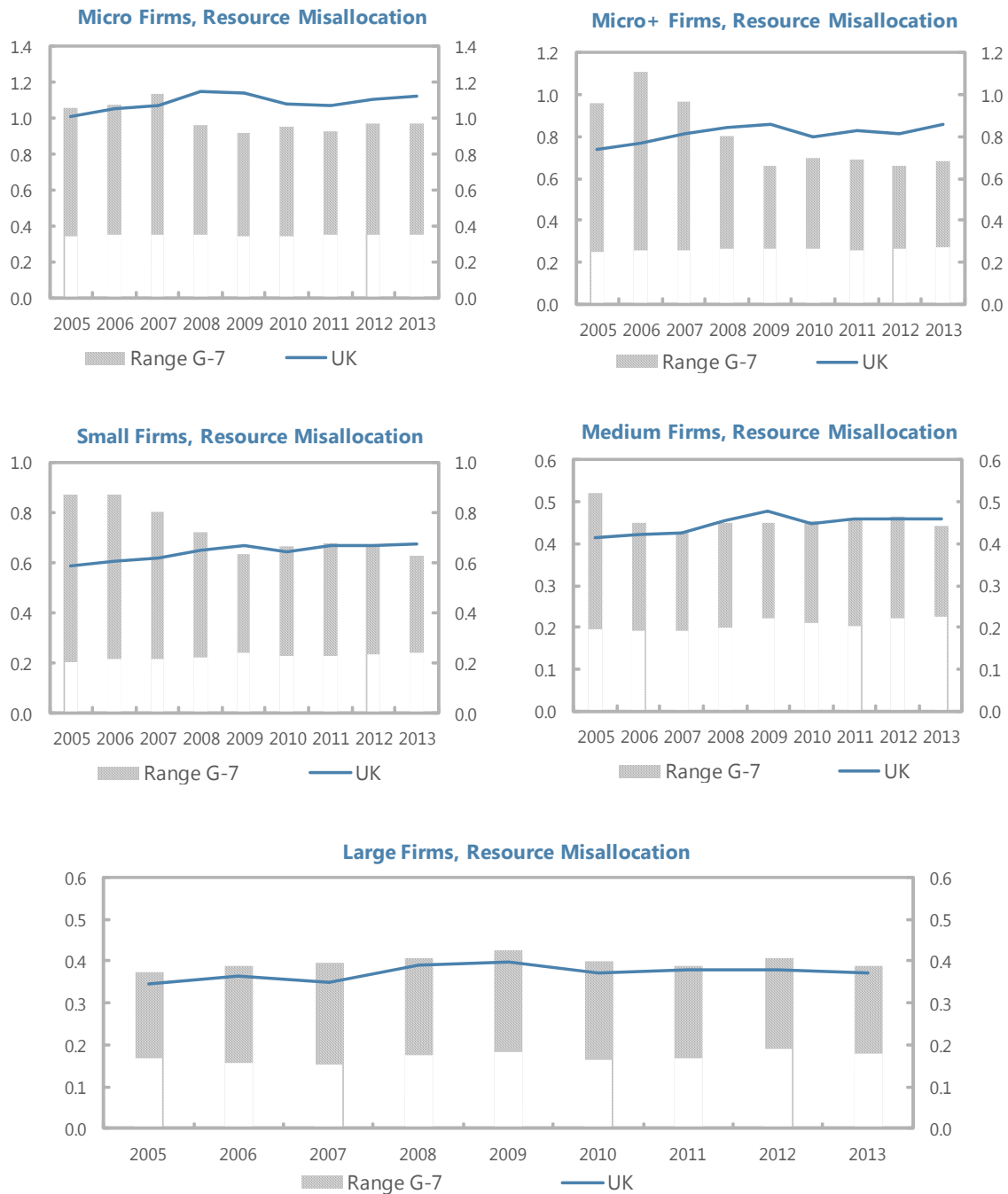
D. Conclusions

16. A single theory cannot explain the totality of the UK productivity slowdown, but the decline in TFP growth is its main cause. The slowdown is mostly caused by a broad-based TFP decline and not by a decline in capital deepening. The decline in TFP growth occurred in most sectors, though it was stronger in some sectors than in others.

17. Resource misallocation may have been one factor behind the decline in TFP growth, but the result is sensitive to the choice of time period. The analysis in this chapter suggests that resource misallocation—perhaps due to impaired credit channels following the crisis—may have contributed approximately 0.4 percent per annum quarter to the UK's post-crisis productivity slowdown. The misallocation in the UK appears to be at the upper limit of the misallocation in other European G7 countries. There is a large variation in misallocation by firm size—larger UK firms are relatively closer to those in other European G7 countries than are smaller ones. Misallocation in the economy as a whole has subsided in recent years, but there are pockets where it persists, for example in small construction firms and in financial intermediation.

18. The estimated effect of resource misallocation still leaves most of the decline in TFP growth unexplained. A number of other theories have been proposed to further explain the “productivity puzzle,” such as technological change, shifts in labor force composition, and mis-measurement (Appendix I). Further disentangling the TFP decline into these and other factors is beyond the scope of this analysis.

Figure 2. Comparison of UK and European G7 Resource Misallocation 1/



1/ Micro firms: 1-9 employees, Micro+ firms: 10-19 employees, Small firms: 20-49 employees, Medium firms: 50-249 employees, Large firms: 250+ employees.
Sources: ORBIS database and IMF staff calculations.

Appendix I. Literature Review

Existing research on the UK's productivity slowdown has proposed a number of possible explanations, including the following:

- ***The productivity slowdown is at least in part a consequence of measurement errors.*** Research by the Bank of England shows that measurement errors (e.g., under-estimated growth) could account for approximately one-quarter of the reported productivity slowdown.¹ While the bias does not explain the whole productivity “puzzle”, it could be an important piece of the puzzle, especially if it turns out that the UK bias was greater than the biases in other G7 and OECD countries.
- ***Productivity fell because firms hoarded labor to preserve firm-specific human capital in the uncertain recessional environment.*** When the fall in labor productivity first appeared, around 2009, many attributed it to labor hoarding—that is, firms holding on to labor, especially skilled labor, in a time of uncertainty.² But as time went by, the uncertainty argument became less persuasive and is now considered a less credible explanation of the slowdown during 2007–14. Furthermore, this theory can account for the *absolute* productivity slowdown, but it is less persuasive at explaining the slowdown *relative* to other advanced economies, which faced similar levels of uncertainty.
- ***Increased labor participation and low investment have weighed on productivity.*** Jon van Reenen and João Paulo Pessoa suggest that the productivity slowdown is the result of firms responding to changes in relative factor prices.³ Pension reforms increased labor participation, which, in a flexible UK labor market, pushed down the cost of labor. At the same time, increases in the cost of capital further reduced the relative cost of labor as a factor of production. In response to the shift in factor costs, firms increased demand for labor and reduced investment. As a result, capital deepening slowed and productivity growth stagnated. This theory implies no market failure and suggest no need for policy intervention—firms responded optimally to an exogenous shock with no associated market failure and no need for policy intervention.⁴

¹ *The UK productivity puzzle* by Barnett, Batten, Chiu, Franklin, and Sebastián-Barriol of the Bank's Monetary Analysis Directorate, Bank of England Quarterly Bulletin, 2014Q2. The uncertainty of output measurements is illustrated in an ONS 2014 publication, *National accounts articles — impact of ESA10 changes on current price GDP estimates*.

² The option value of delaying (investment) until uncertainty resolution is well-established. An instructive analysis is *Uncertainty and Investment Dynamics* by Bloom, Bond, and Van Reenen (2007).

³ *The UK Productivity and Jobs Puzzle: Does the Answer Lie in Labour Market Flexibility?* Joao Paulo Pessoa and John Van Reenen, CEPR Special Paper No. 31, June 2013 and *The Great British Jobs and Productivity Mystery*, CEPR Policy Portal, June 2014.

⁴ Weale expounded on the links between the labor market and productivity in a speech at the Manchester Economics Seminar in November 2012.

- **Declining high-value sectors (e.g., oil production and financial services) have weighed on productivity.** As high value-added sectors shrink, labor reallocates to less productive sectors, which could lower aggregate productivity.⁵ However, lower productivity growth has mainly been a phenomena about lower productivity growth within sectors, rather than about shifts in the composition of production across sectors.
- **The slowdown is a consequence of resource misallocation due to damage to financial intermediation.** A well-known proponent of this theory is Ben Broadbent., who has proposed a thesis of productivity held back by damage to financial intermediation.⁶ The damage increased the cost of capital, worsened credit rationing, and, most importantly, impaired reallocation of capital from less productive to more productive firms. This theory could in principle help identify market imperfections that could be mitigated with suitable policies, though damage to financial intermediation caused by the crisis is likely to recede as financial sector balance sheets are repaired.
- **A collapse of within-firm productivity.** An analysis by Riley, Rosazza, Bondibene, and Young (2014) finds that the major part of the post-recession decline in UK productivity growth was accounted for by a widespread productivity shock within firms, while the resource misallocation contributed a smaller amount. Their findings point to the importance of a common factor in explaining the productivity “puzzle”. They do not see wage flexibility or sectoral declines as significant contributing factors, but rather see the slowdown as a pro-cyclical process, associated with “productivity weakness within firms and probably reversible when output recovers on a sustainable basis.”⁷ This view assumes that the current business cycle has been extremely long and that, since productivity is likely to recover on its own, the scope for interventionist policies is limited.

⁵ This effect assumes that high labor productivity in these sectors reflects sector-specific effects (e.g., economic rents) rather than differences in the skill composition of their labor force that would cause this labor force to have high productivity even if it moved to another sector.

⁶ *Productivity and the allocation of resources*, speech at the Durham Business School, September 2012 and *Conditional guidance as a response to supply uncertainty*, speech at the London Business School, September 2013.

⁷ NIESR supports this view in a May 2015 survey.

Appendix II. Data Preparation

The ORBIS database is the main source of analyzed data. The ORBIS database is compiled and marketed by Bureau van Dijk (BvD).¹ The database contains about 100 million records on firms from more than 100 countries. Each record includes annual information on firms' balance-sheets, income statement, and other firm-specific information. BvD updates the database four times a year to increase coverage and improve timeliness of the data. The coverage of the UK economy appears detailed since the database contains more than 30 million observations for the period 2005–14. However, far fewer records include the information on added value and employment, two key variables needed in the analysis of labor productivity. Furthermore, the reported sample is not random, since it does not match the size distribution of UK firms. On the whole, the database provides useful raw material that needs to be refined.

The database requires extensive preprocessing before the analysis. First, we purge the data of all records with missing information on value added or employment. Second, we remove all observations that grossly differ from acceptable values for typical economic variables, with the goal of reducing the impact of coding, data entry, and processing errors. Third, to deflate the data, assure international comparability, and compute TFP values, we broadly follow the procedure in Gal (2013).² We deflate nominal values with NACE 1-digit level deflators for added value and capital investment and convert all values into 2005 international dollars. In this conversion, we distinguish between firms in tradable sectors (manufacturing) and service firms.³ Finally, we re-weigh the data to match the distribution of firm sizes in the economy.

¹ For details see <http://www.bvdinfo.com/en-gb/our-products/company-information/international-products/orbis>.

² However, we do not use the permanent inventory method (PIM) to estimate the stock of capital. In short panels the PIM could be seriously biased because it depends on the accuracy of the initial capital stock.

³ STATA code, used in preprocessing, that documents the whole procedure is available from the author on request. However, raw data cannot be distributed, since ORBIS is a commercial database.

Appendix III. TFP and K/L Growth Regressions

Tables A1 and A2 present the results of TFP growth and capital deepening regressions.

Table A1. United Kingdom: TFP Growth Regressions 1/

| | | | | | |
|--|-----------|------------|------------|------------|------------|
| Distance to TFP frontier | 0.148*** | 0.148*** | 0.165*** | 0.165*** | 0.186*** |
| 2007 | | -0.0110 | | -0.00931 | -0.00934 |
| 2008 | | 0.0205*** | | 0.0245*** | 0.0248*** |
| 2009 | | -0.0542*** | | -0.0466*** | -0.0460*** |
| 2010 | | -0.000575 | | 0.0108 | 0.0125* |
| 2011 | | -0.0192*** | | -0.00395 | -0.00120 |
| 2012 | | -0.0456*** | | -0.0285*** | -0.0255*** |
| 2013 | | -0.0225*** | | -0.00351 | 0.000293 |
| 2014 | | -0.0389*** | | -0.0206*** | -0.0176** |
| Size: 10-19 employees | -0.109*** | | -0.0752*** | -0.0740*** | -0.0701*** |
| Size: 20-49 employees | -0.154*** | | -0.150*** | -0.148*** | -0.151*** |
| Size: 50-249 employees | -0.196*** | | -0.226*** | -0.224*** | -0.240*** |
| Size: 250+ employees | -0.205*** | | -0.254*** | -0.252*** | -0.267*** |
| Electricity, gas, steam and air conditioning | | | | | 0.0917** |
| Water supply; sewerage, waste management | | | | | -0.0421** |
| Construction | | | | | -0.0586*** |
| Wholesale and retail trade; repair | | | | | -0.104*** |
| Transportation and storage | | | | | -0.0606*** |
| Accommodation and food service | | | | | -0.141*** |
| Information and communication | | | | | -0.0237*** |
| Financial and insurance activities | | | | | -0.0222** |
| Real estate activities | | | | | -0.0761*** |
| Professional, scientific and technical services | | | | | -0.0181** |
| Administrative and support services | | | | | -0.0743*** |
| Public admin., defense, compulsory soc. security | | | | | 0.0678 |
| Education | | | | | -0.0359 |
| Human health and social work | | | | | -0.0445*** |
| Arts, entertainment and recreation | | | | | -0.174*** |
| Other service activities | | | | | -0.112*** |
| Constant | 0.259*** | -0.196*** | -0.177*** | -0.0328*** | -0.0268*** |

*** p<0.01, ** p<0.05, * p<0.1

1/ Based on annual, firm-level data for 2006-14. Manufacturing is the omitted sector dummy. Including lagged TFP growth as an explanatory variable does not change the results substantially.

Sources: ORBIS database and IMF staff calculations.

Table A2. United Kingdom: Capital Deepening (K/L growth) Regressions 1/

| Distance to K/L frontier | 0.431*** | 0.432*** | 0.432*** | 0.433*** | 0.615*** |
|--|-----------|-----------|-----------|-----------|-----------|
| 2007 | | -0.0891 | | -0.0788 | -0.0898 |
| 2008 | | -0.435** | | -0.417** | -0.432** |
| 2009 | | -0.0623 | | -0.0271 | -0.0427 |
| 2010 | | -0.237 | | -0.186 | -0.172 |
| 2011 | | -0.172 | | -0.107 | -0.113 |
| 2012 | | -0.0723 | | 0.000331 | -0.00285 |
| 2013 | | -0.110 | | -0.0323 | -0.0454 |
| 2014 | | -0.216 | | -0.135 | -0.151 |
| Size: 10-19 employees | 0.285 | | 0.166 | 0.160 | -0.0580 |
| Size: 20-49 employees | -0.510** | | -0.556*** | -0.565*** | -0.884*** |
| Size: 50-249 employees | -0.812*** | | -0.831*** | -0.842*** | -1.238*** |
| Size: 250+ employees | -0.805*** | | -0.972*** | -0.983*** | -1.391*** |
| Electricity, gas, steam and air conditioning | | | | | 1.953* |
| Water supply; sewerage, waste management | | | | | -0.199 |
| Construction | | | | | -1.583*** |
| Wholesale and retail trade; repair | | | | | -0.251** |
| Transportation and storage | | | | | -0.753*** |
| Accommodation and food service | | | | | -0.518** |
| Information and communication | | | | | -0.472** |
| Financial and insurance activities | | | | | -1.170*** |
| Real estate activities | | | | | -1.603*** |
| Professional, scientific and technical services | | | | | -1.466*** |
| Administrative and support services | | | | | -1.204*** |
| Public admin., defense, compulsory soc. security | | | | | -1.515 |
| Education | | | | | -0.229 |
| Human health and social work | | | | | 1.079*** |
| Arts, entertainment and recreation | | | | | 0.739* |
| Other service activities | | | | | -1.089*** |
| Constant | 0.923*** | -1.356*** | -1.204*** | -0.664*** | -0.551** |

*** p<0.01, ** p<0.05, * p<0.1

1/ Based on annual, firm-level data for 2006-14. Manufacturing is the omitted sector dummy. Including lagged K/L growth as an explanatory variable does not change the results substantially.

Sources: ORBIS database and IMF staff calculations.

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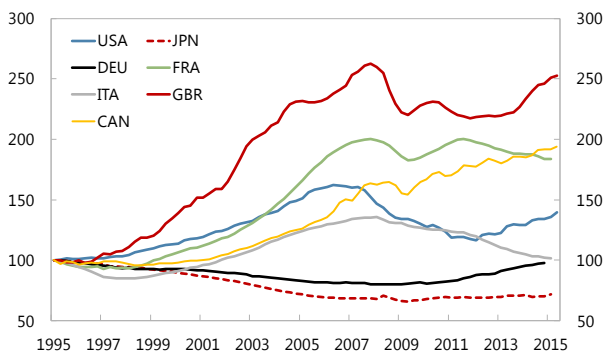
PROPERTY TAXATION AND HOUSING SUPPLY¹

This chapter examines how tax reforms could help ease structural supply constraints in the UK's housing market. Options for reform include (i) reducing council tax discounts for single occupants to encourage more efficient use of residential properties and (ii) phasing out stamp duty land tax and replacing it with a better designed property tax.

A. Introduction

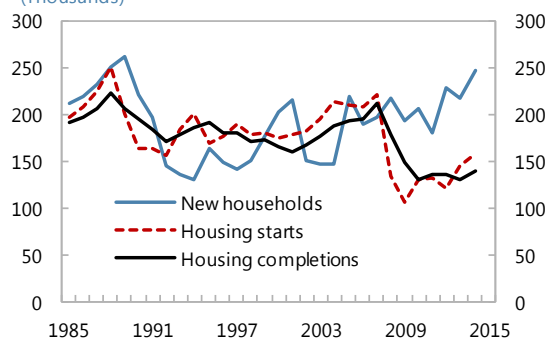
1. The UK has experienced persistent upward pressure on house prices, in part due to supply constraints. House prices in the UK have risen by more than in any other G7 country over the past two decades. This partly reflects restrictive planning regulations and other constraints that have long restricted supply, such that even the house-price boom of the early 2000s was not accompanied by the type of building surge seen in other countries such as Ireland and Spain. Since 2008, supply constraints have prevented housing completions from keeping pace with new household formation, adding to upward pressure on prices.²

Real House Price Index
(1995Q1=100)



Sources: OECD and IMF staff calculations.

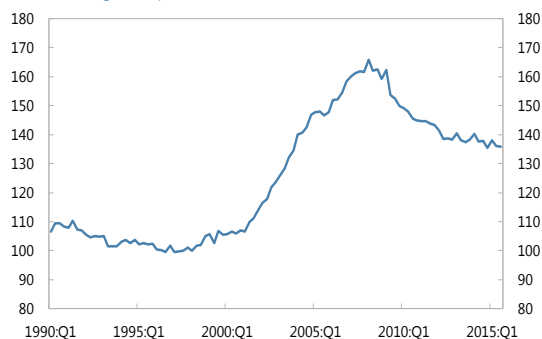
UK: Household Formation vs. Housing Construction
(Thousands)



Source: Haver.

2. High house prices have contributed to high levels of household leverage. High house prices have forced households to take on high levels of mortgage debt, which in turn is the main driver behind the UK's household debt-to-income ratio of 140 percent. This ratio is high compared to most other advanced economies or the UK's pre-boom (i.e., circa 2000) levels, despite some decline in the immediate post-crisis years.

UK: Household Debt to Income Ratio
(Percent of gross disposable income)



Sources: Haver Analytics and IMF staff calculations.

¹ Prepared by Kazuko Shirono (EUR).

² Many studies have identified supply constraints as a key factor contributing to the UK's strong housing market (see, for example, Hilber, 2015 and IMF, 2014).

3. Against this background, this chapter reviews the UK’s property tax system, with an eye toward examining how reforms might help ease housing supply constraints. The property tax system can affect housing supply by influencing (i) incentives to make the most efficient use of the existing housing supply and (ii) incentives for local governments to approve new construction and rationalize planning restrictions. Tax reforms that ease constraints on housing supply could not only improve allocative efficiency, but also (i) support financial stability by reducing incentives for households to take on high levels of mortgage debt and (ii) lessen wealth inequality, as higher house prices have been an important contributor to wealth inequality in the UK in recent decades. The following sections review the UK’s property tax system and discuss reform options that could help ease constraints on housing supply.

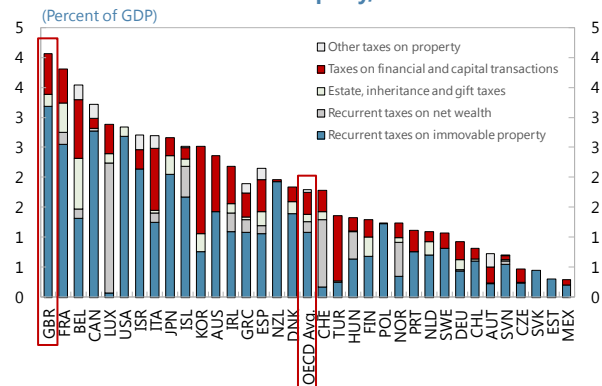
B. Property Taxes in the UK

Overview

4. Property tax revenue is relatively high in the UK. Property tax revenue as a percent of GDP is the highest among OECD countries.³ This is also the case for revenue from recurrent immovable property tax (blue bar in the text chart). It is possible that the UK might place lower on property tax revenue as a percent of property tax values, given the UK’s high property prices, especially in London. However, such an assessment is hampered by limited cross-country data on property valuations.

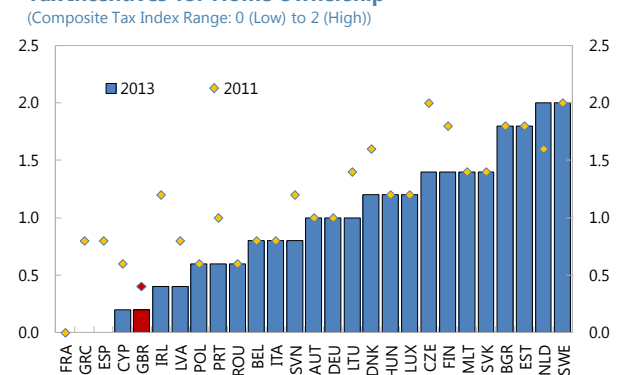
5. The degree of tax preferences for owner-occupied housing seems relatively limited in the UK based on some measures. A composite indicator of tax incentives for owner-occupied housing compiled by the European Commission (2014) suggests that the degree of favorable tax treatment of homeownership is low in the UK compared with other European

Revenue from Taxes on Property, 2013



Sources: OECD and IMF staff calculations.

Tax Incentives for Home Ownership



Sources: European Commission and IMF staff calculations.

³ Taxes on property include all recurrent and non-recurrent taxes on the use, ownership, or transfer of property, including taxes on immovable property or net wealth and gift or inheritance taxes.

countries (see text chart).⁴ Indeed, interest deductibility of mortgages for owner-occupied housing was phased out entirely between 1974 and 2000 in the UK. One caveat, however, is that it is not straightforward to compare tax incentives across countries, given wide differences in tax systems. More generally, the effect of the UK's property tax system on the housing market is an area of ongoing debate (see, for example, Armstrong, 2015, Hilber, 2015, and Crawshaw, 2009). In this chapter, we focus mainly on the relationship between the UK's property tax system and the supply-side of the housing market.⁵

6. The UK has various property-related tax instruments. These include council tax, business rates, stamp duty land tax, capital gains tax, and inheritance tax. These taxes comprised more than 10 percent of general government tax revenue in FY14, with council tax, business rates, and stamp duty land tax accounting for 5 percent, 5 percent, and 2 percent of total tax receipts, respectively. This section focuses on taxes on residential properties (i.e., excluding business rates, which are levied on non-residential properties).⁶

Council tax

7. Council tax, introduced in 1993, is the main source of income for many local governments. Although council tax is partly a function of property values, the authorities do not view it as a recurrent tax on property values, but as a charge for, and way of funding, local government services. Consequently, council tax has both a property value element and an individual element: the amount of council tax payable on a property depends on the valuation band to which it is allocated and the circumstances of the occupiers, such as the number of people living in the home. There are about 330 local authorities, which set council tax levels. There are eight valuation bands, and each property is assigned to a band based on its 1991 valuation. The council tax for each valuation band is defined as a fixed ratio to band D.

⁴ This index is computed by combining three categories of housing-related tax instruments: (i) transaction taxes; (ii) recurrent property tax; and (iii) mortgage interest tax relief. The index ranges from 0 to 3, with higher values indicating tax incentives skewed toward owner-occupied housing and debt. The index is a weighted average of the three scores, with transaction taxes having 20 percent and recurrent taxes and interest tax relief each having 40 percent of the total.

⁵ See Crowe and others (2011a), Crowe and others (2011b), and Norregaard (2013) for more general discussion of the housing market and property taxation. See also Blochlinger (2015) and Blochlinger and others (2015).

⁶ Pope and Barra (2014) provide a broader review of the UK tax system beyond property-related taxes.

Council Tax Bands and Rates in England, 2015-16 1/

| Band | Value as of April 1, 1991 | Tax rate as a proportion of that in band D | Average band D rate in England (£) | Number of properties in band in England (thousands) 2/ |
|------|---------------------------|--|------------------------------------|--|
| A | Up to £40,000 | 6/9 | 989 | 5,606 |
| B | £40,001 to £52,000 | 7/9 | 1,154 | 4,499 |
| C | £52,001 to £68,000 | 8/9 | 1,319 | 5,008 |
| D | £68,001 to £88,000 | 9/9 | 1,484 | 3,544 |
| E | £88,001 to £120,000 | 11/9 | 1,814 | 2,186 |
| F | £120,001 to £160,000 | 13/9 | 2,144 | 1,158 |
| G | £160,001 to £320,000 | 15/9 | 2,473 | 811 |
| H | More than £320,000 | 18/9 | 2,968 | 132 |

Source: www.gov.uk

1/ This table shows average council tax charges for dwellings occupied as a main residence by two adults before any reductions due to discounts, exemptions or council tax benefit.

2/ The data are as of September 2014.

8. Several features characterize council tax (Mirrlees and others, 2011). First, most properties are concentrated in the lower bands. About two-thirds of all properties are in the bottom three bands. Second, the tax is regressive relative to its base. For example, the charge in band H is set two times higher than the charge in band D while the house at the bottom of band H is worth almost five times more than the house at the bottom of band D. Third, there is no differentiation between properties in the same band. For example, band H includes all properties whose values were higher than £320,000 in 1991, including those whose values have appreciated a lot since 1991 and are worth many times more than £320,000 now.

9. There are also exemptions and discounts. For example, full-time students and disabled people are exempt from council tax, and vacant properties normally get some discount for the first few months for which the properties are vacant. A 25 percent discount is granted if the property is occupied by only one adult. Discounts for single occupancy are based on the view that council tax is a user fee for local government services and that single occupants should pay less because they consume fewer services than larger households. However, if one views property taxes as mainly a tax on housing services aimed at countering the difficulty of taxing such services under the VAT, then discounts for single occupancy may encourage inefficient use of the housing stock, especially single individuals consuming excess housing (i.e., an inefficiently high number of unoccupied rooms).⁷

⁷ Mirrlees and others (2011) propose replacing the council tax with a housing service tax which is levied as a flat percentage of the rental value of each property, regardless of being rented or owner-occupied with no discount for single occupancy and empty properties.

10. There have been several changes in council tax recently:

- Council tax freeze grant was introduced in FY11. Under this scheme, local authorities receive a grant if they freeze or reduce their council tax in that particular year. This scheme has been extended to subsequent years, and in FY15, 240 out of 421 local authorities (57 percent of total) received the council tax freeze grant.⁸
- The central government previously set the cap on council tax increases, but the Localism Act of 2011 abolished this and made provision for bringing referendums on excessive council tax increases.
- Centrally-determined support to low-income council taxpayers (“council tax benefit”) has been replaced by locally set discounts (“council tax support”) from April 1, 2013.
- Starting from April 2013, local authorities were given more flexibility to scale back discounts for second homes and temporarily vacant properties. In addition, local authorities are allowed to charge a premium of up to 50 percent for houses that have been empty for more than two years. This empty home premium is charged on top of normal council tax charges.

In short, these changes have devolved more power to local government in designing the council tax.

Stamp duty land tax**11. A buyer pays the stamp duty land tax when purchasing property valued over a certain threshold in England, Wales, and Northern**

Ireland. The threshold is currently set at £125,000 for residential properties and £150,000 for non-residential land and properties. Stamp duty tax rates apply to the part of the property price that falls within each band, similar to the structure of income tax (see text table).

Stamp Duty Land Tax: Residential Property Rates
(percent)

| Property values | Tax rate |
|---|----------|
| Up to £125,000 | 0 |
| The next £125,000 (the portion from £125,001 to £250,000) | 2 |
| The next £675,000 (the portion from £250,001 to £925,000) | 5 |
| The next £575,000 (the portion from £925,001 to £1.5 million) | 10 |
| The remaining amount (the portion above £1.5 million) | 12 |

Source: www.gov.uk

12. A stamp duty reform on residential property was announced at the time of the 2014 Autumn Statement.⁹ Effective from December 4, 2014, the new rules as described above were introduced in calculating the stamp duty tax. Prior to that, the stamp duty land tax was calculated on

⁸ See Department for Communities and Local Government (2015).

⁹ See https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/382327/44695_Accessible.pdf.

the entire purchase price of a residential house. This structure meant sudden increases in stamp duty when the price goes above the next threshold. For example, someone buying a house for £250,000 would pay £2,500 (1%) in stamp duty under the old system. If the price was £1 more, then an extra £5,000 would be charged, as 3% stamp duty is levied on the entire purchase price. This rate structure created incentives to keep prices just below the relevant thresholds. By eliminating these incentives, the new system has reduced distortions and is a step in the right direction. In addition, under the new system, all homes purchased for under £937,500 pay the same or less in stamp duty compared to the old system while some higher-value homes are more heavily taxed than under the old system.

13. The stamp duty land tax on non-residential property continues to be levied on the entire purchase price. For example, someone who buys a commercial property for £275,000 would pay 3 percent of the entire purchase price (£8,250). Extending the residential stamp duty reforms to the non-residential market in a revenue-neutral manner would remove these distortions and improve efficiency.

Stamp Duty Land Tax: Non-Residential Property Rates
(percent)

| Property values | Tax rate |
|--|----------|
| Up to £150,000 - freehold or leasehold with annual rent under £1,000 | 0 |
| Up to £150,000 - leasehold with annual rent of £1,000 or more | 1 |
| £150,001 to £250,000 | 1 |
| £250,001 to £500,000 | 3 |
| Over £500,000 | 4 |

Source: www.gov.uk

14. More recently, 2015 Autumn Statement announced an increase in stamp duty land tax on additional residential properties. Starting from April 2016, higher rates will be charged on purchases of additional residential properties (above £40,000) including buy-to-let properties and second homes.

Capital gains tax

15. Owner-occupied houses are exempt from capital gains tax in the UK if they are the main residence of the owner.¹⁰ On the other hand, buy-to-let properties, business premises, land, and inherited property are subject to capital gains tax at the time of disposal of the property. There are annual exempt amounts below which capital gains tax does not have to be paid. The exempt amount for FY15–16 is £11,000 for individuals and £5,500 for trusts. Capital gains tax rates in FY15–16 are 18 percent for basic-rate taxpayers, and 28 percent for higher and additional-rate taxpayers.

¹⁰ There are also other conditions that need to be met. These other conditions include that part of the property has not been used for business only.

Inheritance tax

16. Inheritance tax revenue is relatively small in size but growing over time due to rising house prices. Inheritance tax is due if a person's estate is worth more than £325,000 on death. The inheritance tax rate is 40 percent on estate assets above the threshold, but the rate may be reduced to 36 percent if 10 percent or more of the estate is given to charity. Transfers between spouses or between civil partners and transfers made seven or more years before death are not normally subject to inheritance tax.

17. The 2015 Summer Budget announced some changes in inheritance tax. A new transferable residence nil-rate band will be introduced from April 2017 in addition to the existing threshold of £325,000. The new nil-rate band will apply when a main residence is passed on death to a direct descendant. This allowance will increase over time and be up to £175,000 in FY20.¹¹ Thus, the effective inheritance tax threshold for an individual will be £500,000 and up to £1 million for some surviving spouses or civil partners by FY20.

Rent-a-room scheme

18. The rent-a-room scheme was introduced in 1992 to increase the supply of private rental accommodation. It grants an exemption from income tax on rental income up to a certain amount when a homeowner rents out furnished residential accommodation in his/her main home. The threshold has been £4,250 per year since 1997, but it will be increased to £7,500 from April 2016, as announced in the 2015 Summer Budget.

C. Property Taxation and the Residential Housing Market

19. As seen above, the property tax system in the UK has country-specific details and complexity. What are the implications of property taxation for housing supply in the UK, and what reforms may ease supply constraints and help reduce risks associated with high house prices and high household debt? This section examines these questions, with a particular focus on the two major property taxes in the UK, namely, council tax and stamp duty land tax.

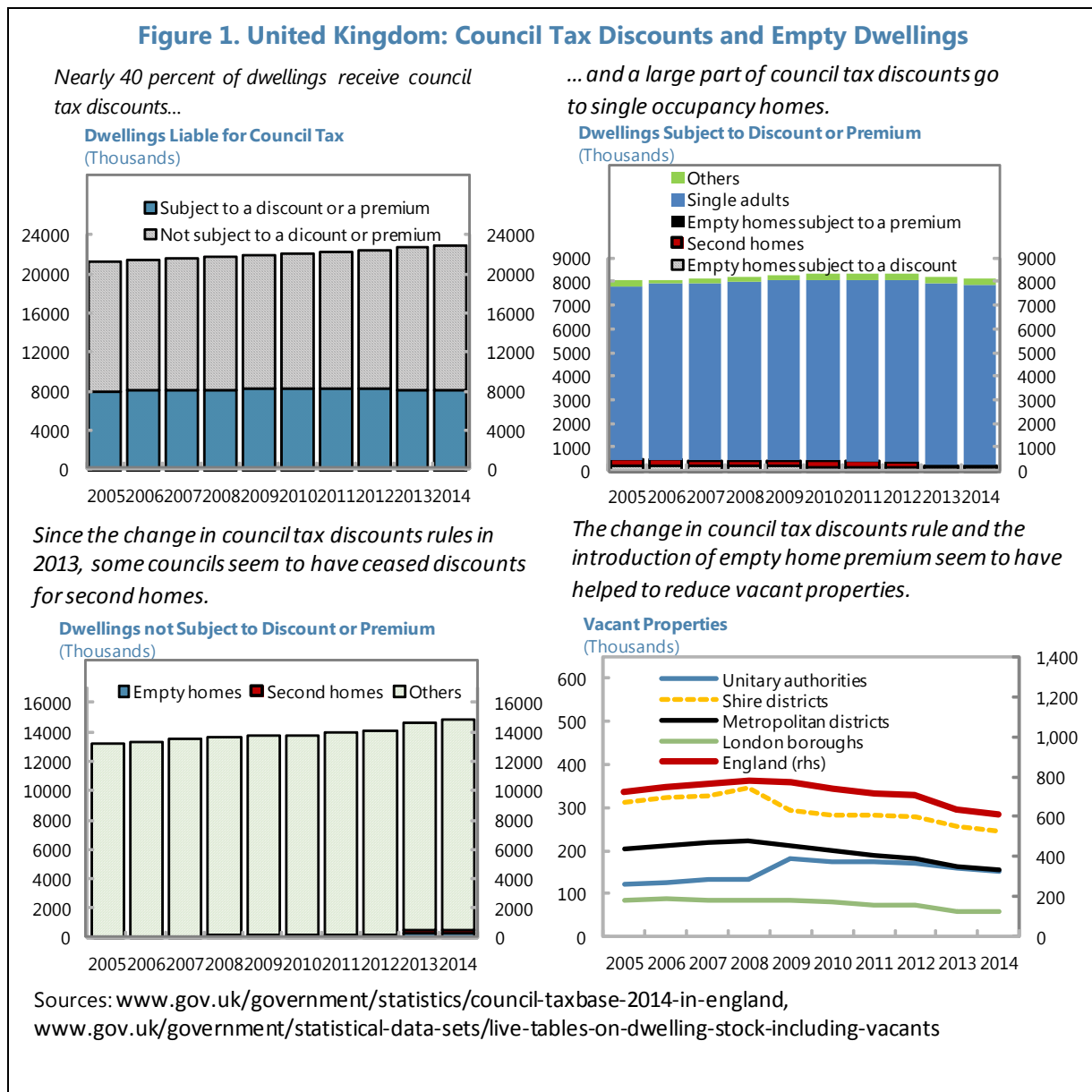
Council tax

20. Some of the discounts council tax provides can encourage inefficient use of residential properties. As noted earlier, single occupants or short-term empty properties receive discounts for council tax. These discounts are likely to create incentives for home owners to keep properties unused or for single people to live in more expensive properties than they would

¹¹ The threshold of £325,000 applies to any assets passed to any individual on death and gifts in the 7 years before death, but the allowance of £175,000 applies only to a main residence passed on death to a direct descendant. The new allowance will be increased as follows: up to £100,000 in 2017-18, up to £125,000 in 2018-19, up to £150,000 in 2019-20, and up to £175,000 in 2020-21.

otherwise live. Reducing these discounts could potentially facilitate more efficient use of residential properties, thereby helping to alleviate supply constraints.

21. Nearly 40 percent of dwellings subject to council tax receive some form of discount (Figure 1). This share declined slightly in 2013 when the rules for discounts for second homes and empty dwellings were modified and the empty-home premium was introduced. The number of vacant properties has been declining in recent years, and the change in the discount rules in 2013 seems to have had some impact in reducing it further. However, the number of empty dwellings is still substantial. At the same time, a large portion of discounts go to single-occupancy homes.

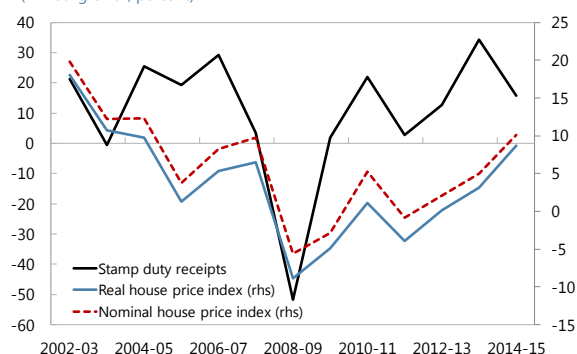


Stamp duty land tax

22. Stamp duty land tax receipts have moved roughly in line with house price developments.

Stamp duty land tax receipts increase when house prices are rising and fall when house prices are declining, but stamp duty receipts tend to be more volatile, dropping by about 50 percent during the global financial crisis. This likely reflects the fact that stamp duty receipts depend not only on house prices but also the number of transactions. Stamp duty receipts' growth rate went down in FY14 despite house price growth. This may be partly due to changes in the design of stamp duty tax implemented in December 2014.

Stamp Duty Land Tax and House Prices
(Annual growth, percent)



Sources: HM Revenue and Customs, and IMF staff calculations.

23. Transaction taxes have been used to discourage short-term speculative property purchases in some countries. For example, Singapore imposed an additional buyer's stamp duty on residential property purchases in December 2011, and this measure has shown effective in reducing demand from foreigners (IMF, 2012). Hong Kong SAR also introduced a special stamp duty in November 2010 on residential properties resold within 24 months of purchases (IMF, 2013).

24. However, transaction taxes are known to be inefficient. Such taxes discourage transactions, and properties will not be held by those who value them most.¹² It also creates disincentives for people to move, thereby reducing mobility in the labor market and preventing people or businesses to live or operate in properties of a size and in a location that are best suited for them. In the UK, Hilber and Lyytikäinen (2013) find that a 2 percentage point increase in stamp duty reduces household mobility by 2–3 percentage points, which implies a reduction in mobility of about 30 percent.

25. Reducing reliance on transaction taxes could facilitate more efficient use of the housing stock and increase supply.

- More specifically, it would be desirable to gradually lessen reliance on stamp duty land tax and increasingly replace it with better-designed property taxes that tax properties as a percent of their updated values (e.g., along the lines recommended by the Mirrlees Review).
- Scaling back stamp duty land tax is likely to increase transactions and household mobility, thereby facilitating more efficient use of the current housing supply.

¹² For example, Davidoff and Leigh (2013) have found that stamp duty in Australia reduces housing turnover: a 10 percent increase in stamp duty lowers turnover by 3 percent in the first year and by 6 percent if sustained over a 3-year period.

- In addition, moving away from transaction taxes, which go to the central government, and moving toward value-based property taxes, which are collected by local governments, is likely to improve incentives for local governments to approve new residential construction (since local governments will benefit from the larger property tax base), thereby increasing housing supply.
- One common objection to such reforms is that property taxes may create liquidity problems for illiquid property owners. However, such problems could be avoided by the gradual phasing-in of higher property taxes, as this gives owners adequate time to secure any financing that may be needed (e.g., in the US, property tax payments are typically bundled with mortgage payments at the time of mortgage financing).

Other taxes

26. Some of the recent changes in property taxation will also have housing market implications. The recent change in the inheritance tax (threshold was increased) might have increased biases toward buying owner-occupied properties over other assets. This could increase demand for owner-occupied housing, putting further pressure on the already high house prices. However, this effect is partially mitigated by the downsizing provisions—anyone who downsizes or ceases to own a home on or after July 8, 2015 will still be able to use the allowance when assets of an equivalent value are inherited by direct descendants. In addition, the recent change in the tax-exempt threshold for the rent-a-room scheme may help increase the supply of rental rooms and alleviate the housing shortage to some extent.

D. Conclusion

27. Property taxation in the UK delivers larger revenue as a percent of GDP than any other OECD country. At the same time, a composite indicator suggests that preferential tax treatment of owner-occupied housing in the UK is limited compared with other European countries.

28. However, a closer look at the UK's property tax system suggests that some areas could be reformed to reduce constraints on housing supply and thereby reduce risks stemming from high house prices. In particular,

- **Reducing council tax discounts:** A large share of council tax discounts is granted to single-occupancy homes. Removing single-occupancy discounts is likely to result in more efficient use of the housing stock, and the viability of this option could be considered. Further reducing discounts for short-term empty properties is possible under the new system, and this option could be applied more if it is not used yet.
- **Reducing reliance on the stamp duty land tax:** The change in the stamp duty land tax announced in the *2014 Autumn Statement* is a step in the right direction, but the fundamental problem of the stamp duty land tax still remains. In the medium term, reliance on stamp duty land tax could be gradually lessened, with increased reliance on a better-designed property tax (e.g., along the lines with the Mirrlees Review). Such a shift is likely to result in more efficient use

of the existing housing stock and increases incentives for local governments to develop new homes.

29. Careful design of property tax reforms can help overcome political economy constraints. In particular, gradual phase-in of reforms may help ease transition costs and lessen opposition. Indeed, while wholesale overhaul of the property tax system may be challenging, measures adopted in recent years show that gradual changes to the system are possible.

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