

Appendix C: Imbalance Indicators

As previously highlighted IFAC (2015), the Council, as part of its toolkit for examining the cyclical position of the economy use a “modular” approach. While estimates of the output gap and potential output are useful summary measures, there is a danger that they may not reflect all available economic information which may point to possible imbalances in the economy.

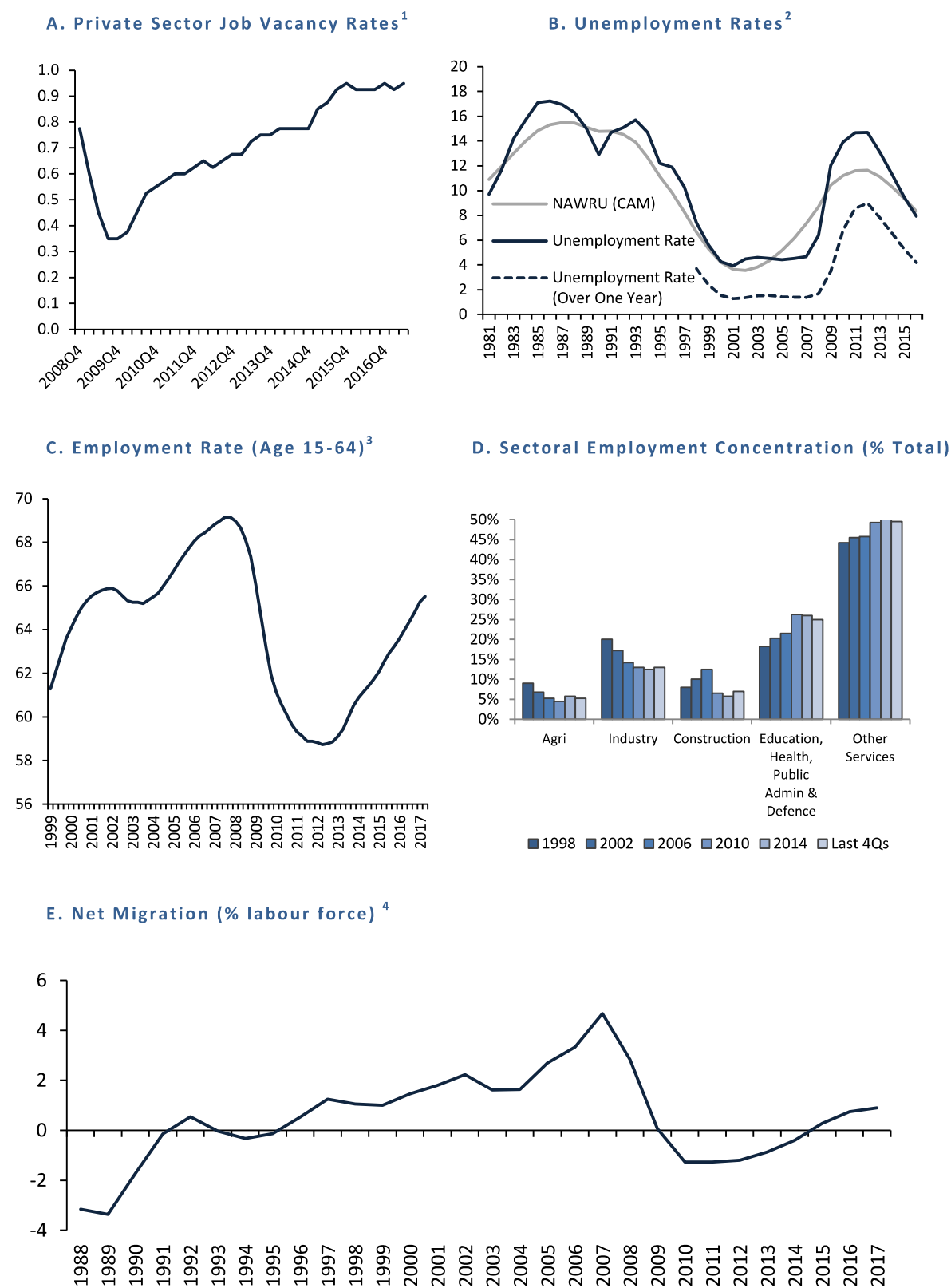
Specifically in response to the financial crisis, Borio *et al.* (2014) developed methods of estimating potential output using financial indicators, which capture the effect of the financial sector on the business cycle. This approach can be applied to other variables which may provide useful information on the cyclical position of the economy. With this in mind, this appendix shows some potential sources of imbalances. Within each module, a number of indicators are examined.

While this modular approach ensures that many potential sources of imbalance are examined, there are difficulties in choosing/estimating weights for each of these imbalance indicators.

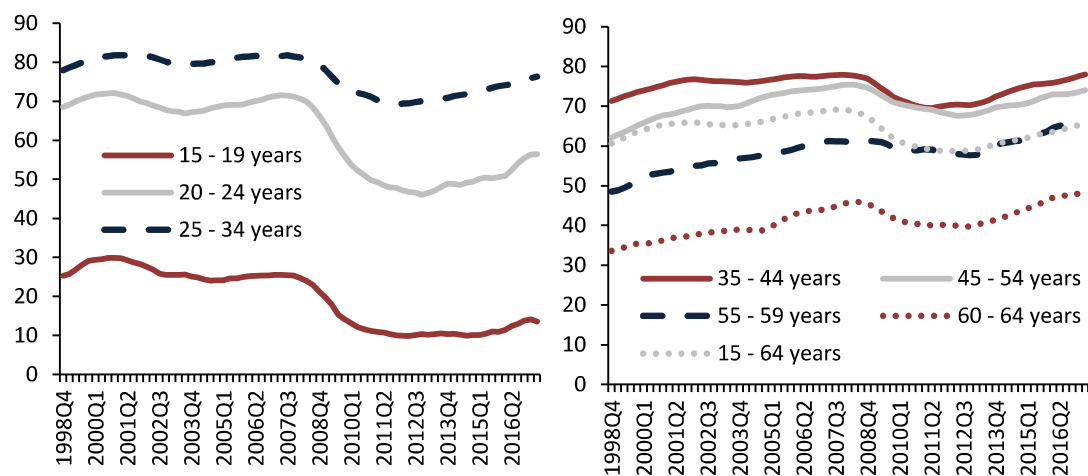
Historical data may be a good guide to variables that explain previous business cycles, but not necessarily current or future ones. Four modules are shown here, namely:

- (i) the Labour Market,
- (ii) the External Sector,
- (iii) Investment/Housing; and
- (iv) Credit

Figure AC.1: Labour Market Indicators
Rates (%)



F. Employment Rates by age (%) ³



Source: CSO; European Commission; internal IFAC calculations.

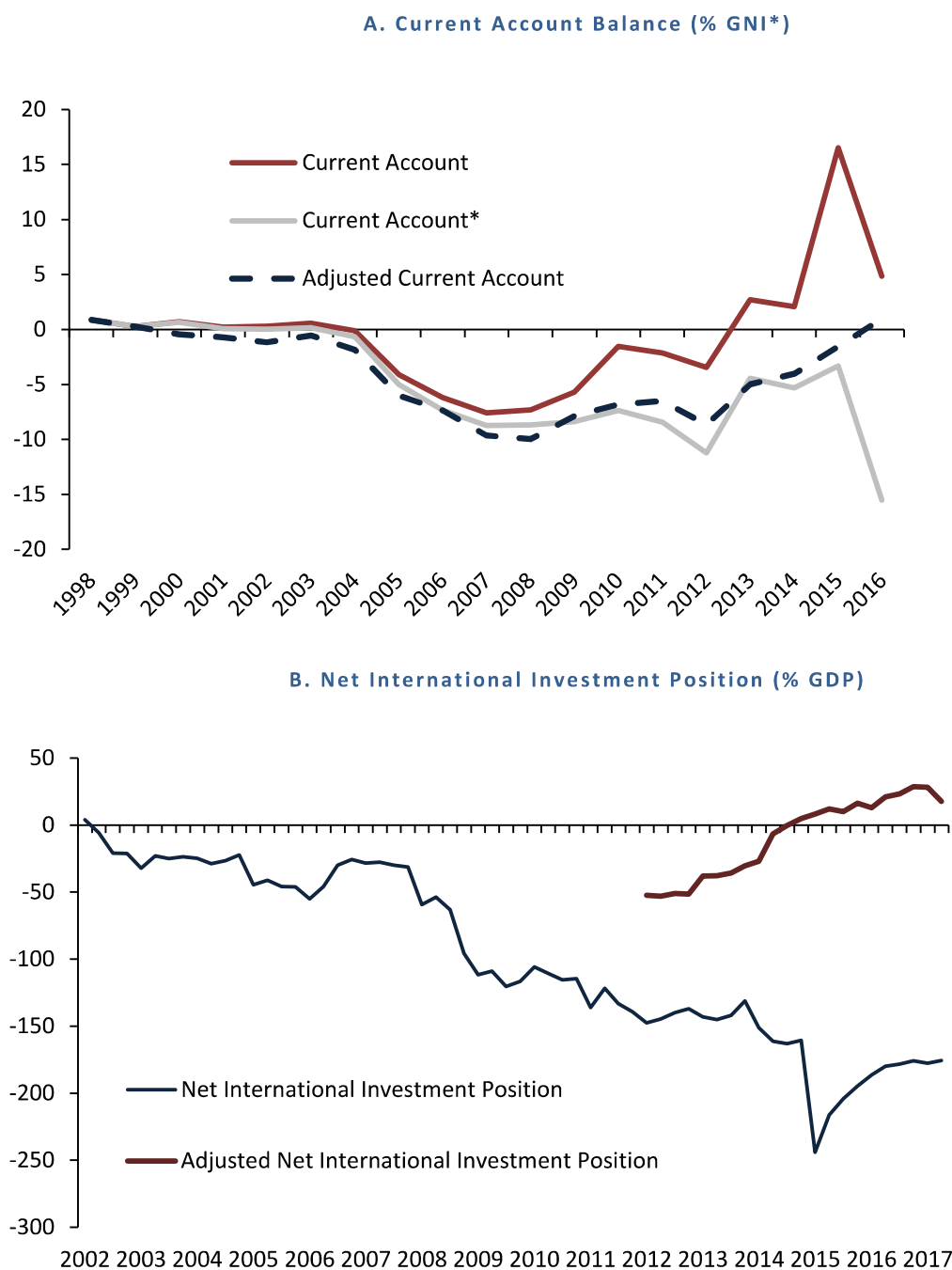
¹ Rates show % of vacancies + occupied jobs. Four quarter moving average of job vacancy rate shown.

² The NAWRU estimates shown are that of the European Commission as based on the Commonly Agreed Methodology.

³ A four quarter moving average is shown for employment rates.

⁴ Positive net migration indicates immigration exceeded emigration.

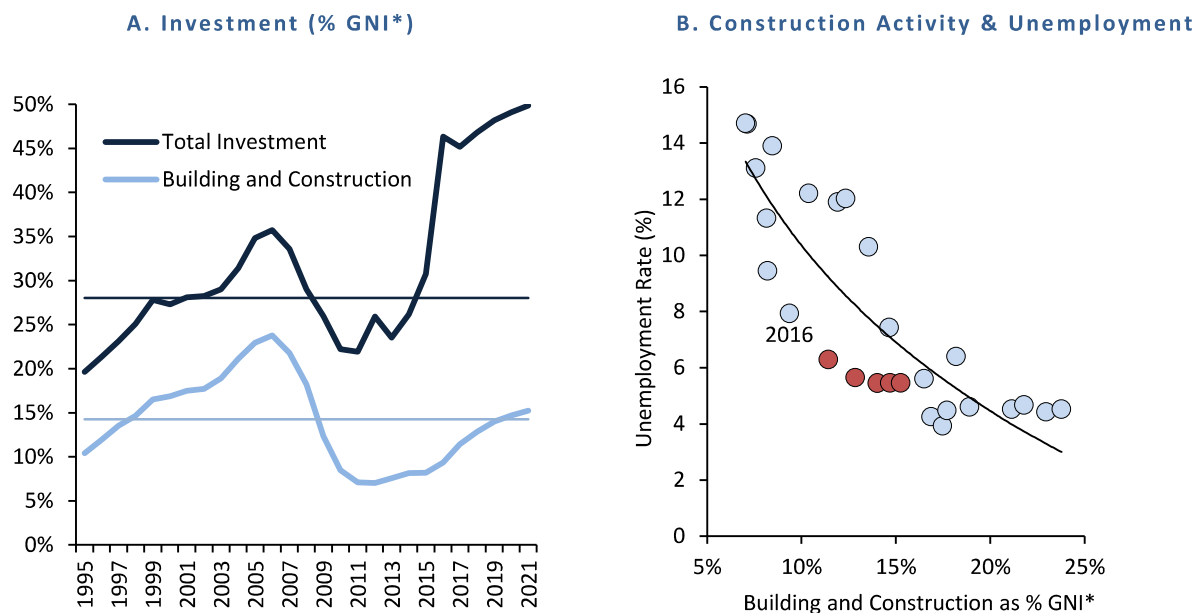
Figure AC.2: Indicators of External Balances
(% GDP)



Sources: CSO; Eurostat and internal IFAC calculations.

Note: Current account balance* excludes the estimated impact of redomiciled PLCs, depreciation on research & development related intellectual property (IP) imports and depreciation on aircraft leasing. The adjusted current account balance takes the three adjustments made for current account* and makes two further adjustments. These are imports of R&D services by foreign owned MNCs and acquisitions of IP assets and aircraft for leasing. Adjusted measure of net international investment position excludes activities of the International Financial Services Centre and Non-Financial Corporations.

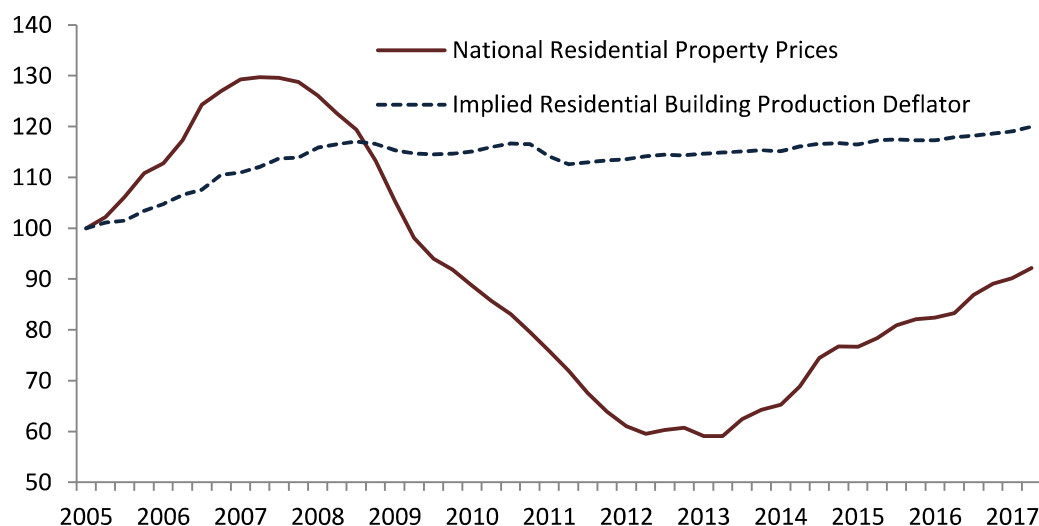
Figure AC.3: Investment/ Housing Indicators
(% GNI*)



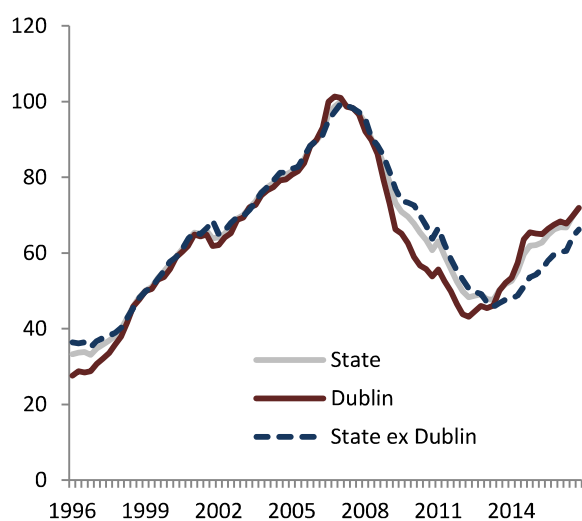
Sources: CSO; AMECO; Department of Finance; internal IFAC calculations.

Notes: Historical averages for investment ratios for 1995-2016 shown as horizontal lines in Panel A. In panel B, forecasts (2017-2021) are shown in red.

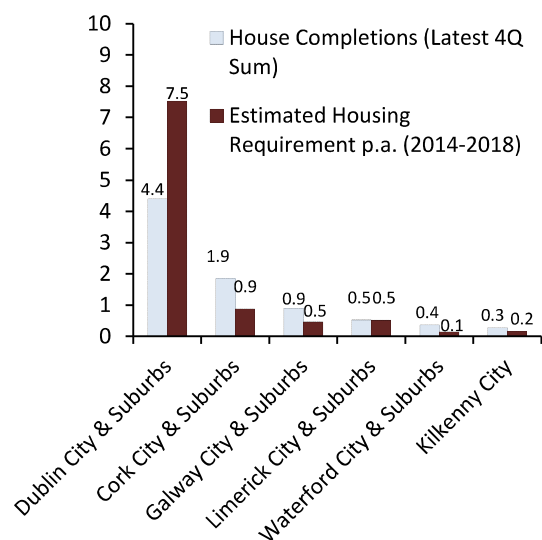
C. Irish Residential Property: Nominal Prices and Implied Production Costs (Index: Q1 2005=100)



D. Real Residential Property Prices (HICP Adjusted) Index: Q1 2007 =100)

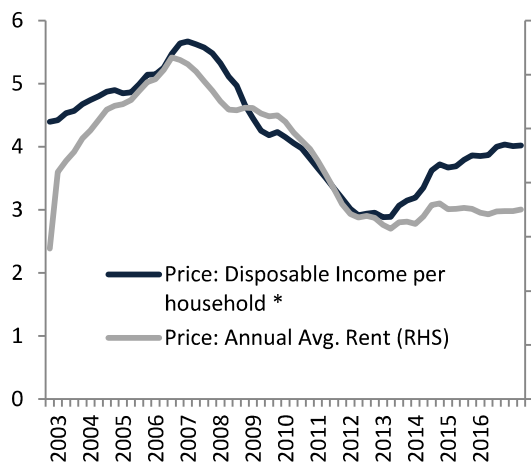


E. Estimated Housing Requirements and Completions (000s)

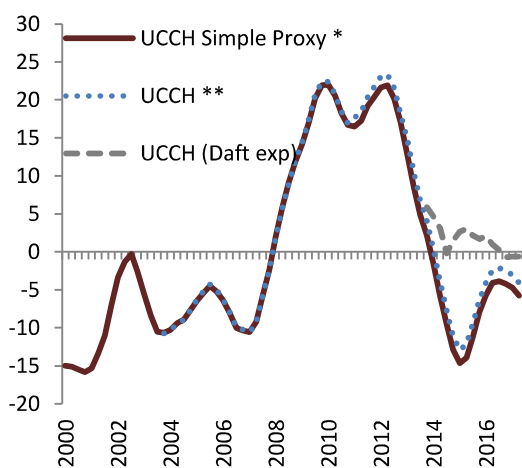


Sources: CSO, ESRI/PTSB, Housing agency estimates and Department of Housing, Planning, Community and Local Government; and internal IFAC calculations.

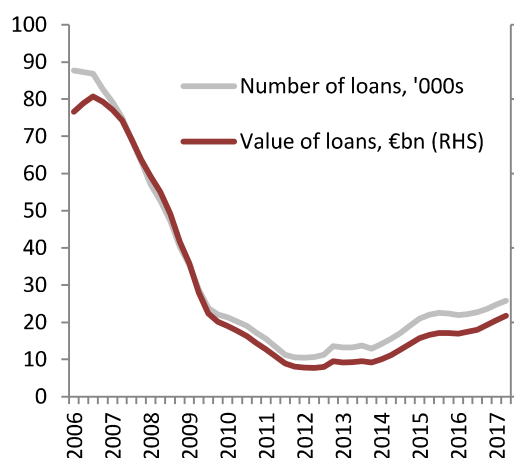
F. Housing Valuation Ratios



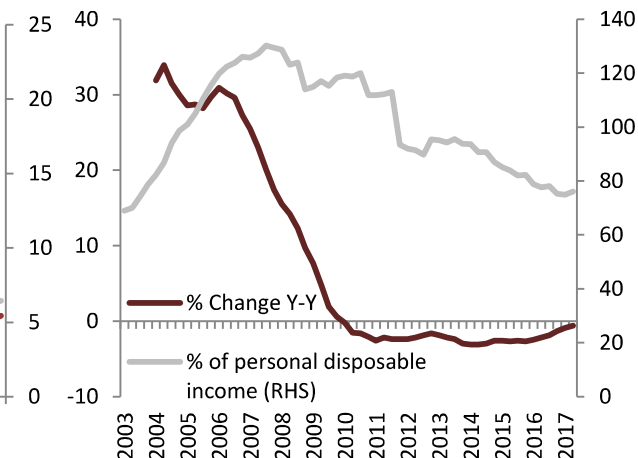
G. User Cost of Capital for Housing (UCCH)



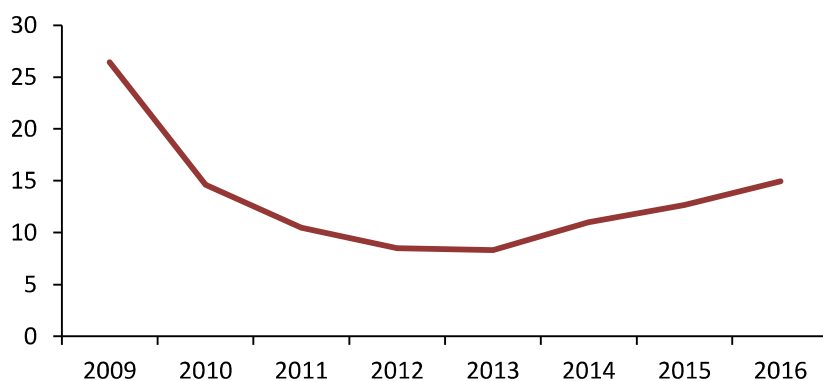
H. Annualised Residential Mortgage lending (first-time buyer & mover purchase loans)



I. Loans to Irish Households for House Purchase



J. Housing Completions (000s)

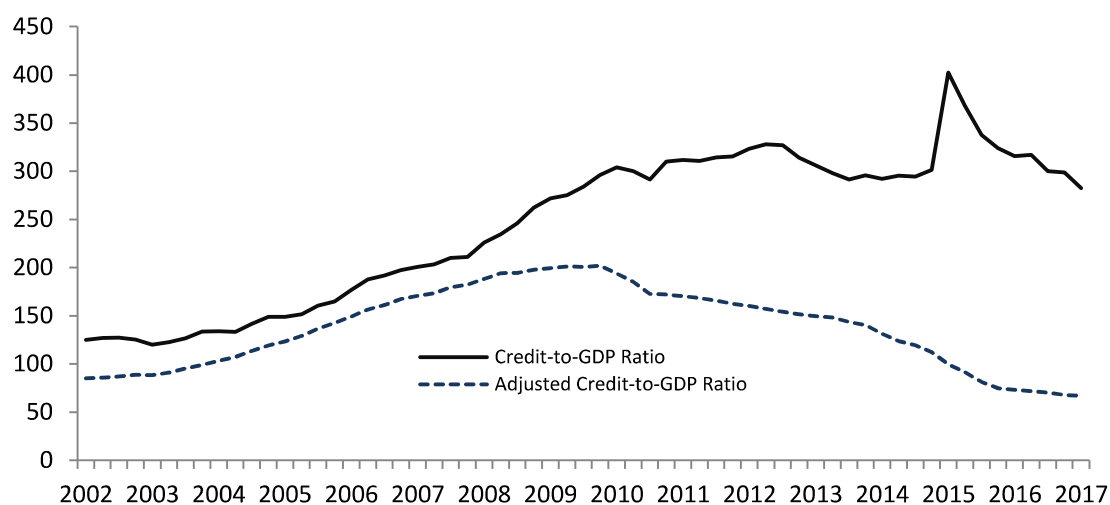


Sources: CSO, ESRI/PTSB, Central Bank of Ireland, IBF Mortgage Market Profile, Department of Housing, Planning, Community and Local Government; and internal IFAC calculations.

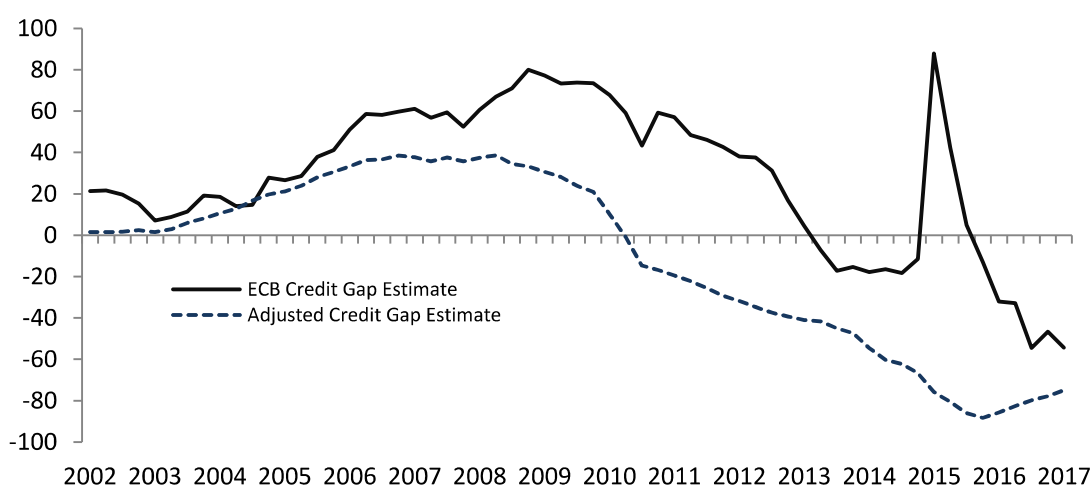
Note: Price to disposable income per household corresponds to average house prices divided by moving 4-quarter sum of adjusted personal disposable income per capita. UCCH simple proxy corresponds to new mortgage rates less annual price change for the past 4 Qs. UCCH** includes first-time buyer taxes/subsidies; down-payments; depreciation/maintenance. UCCH (daft) uses Daft.ie 12 month price expectations. Housing stock is proxied by Long-term loans; ESA-95 basis pre-2012.

Figure AC.4: Credit Indicators
(% GDP)

A. Private Sector Credit-to-GDP Ratios (% GDP)



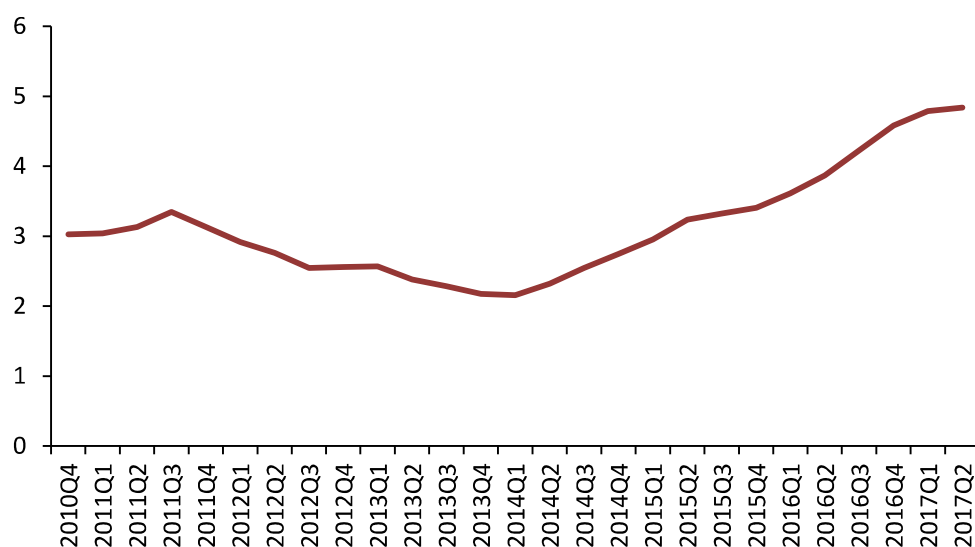
B. Private Sector Credit-to-GDP Gaps (% GDP)



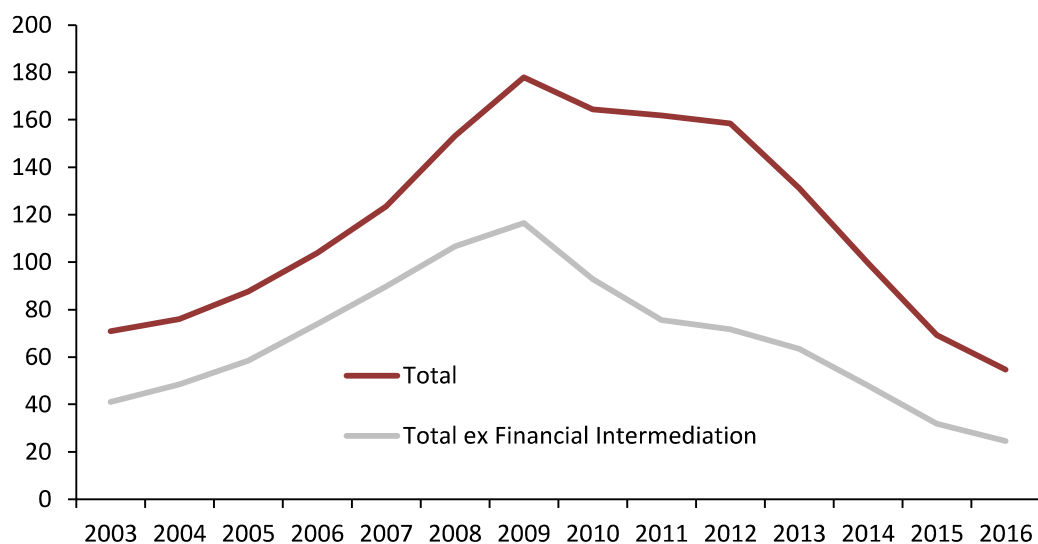
Sources: CSO; Central Bank of Ireland and internal IFAC calculations.

Notes: Adjusted ratios are constructed as Irish resident private sector enterprise credit (excl. financial intermediation) plus total loan liabilities of Irish households to adjust for the impact of multinational non-financial corporations given that associated credit is often sourced outside of Ireland (e.g., Box 6: Macro-Financial Review 2015:I, Central Bank of Ireland). A similar methodology to that in ESRB recommendation (18/06/2014) on guidance for countercyclical buffer rates is used to specify a credit ratio as: $(\text{CREDIT}_t / (\text{GDP}_t + \text{GDP}_{t-1} + \text{GDP}_{t-2} + \text{GDP}_{t-3})) \times 100\%$. A recursive Hodrick-Prescott filtered trend ratio is specified, with smoothing parameter $\lambda = 400,000$ to capture the long-term trend in the behaviour of the credit-to-GDP ratio. The credit-to-GDP gap is given by: $\text{GAP}_t = \text{RATIO}_t - \text{TREND}_t$.

**C. New Credit Advanced to Irish Resident Small and Medium Enterprises
(Excluding Financial Intermediation, € billion, 4Q Sum)**



D. Credit Advanced to Irish resident Private Sector enterprises (% GNI*)



Sources: CSO; Central Bank of Ireland and internal IFAC calculations.