annum at peak over 2003–2006, whereas the Department forecasts increases of 6,000 per annum (2019–2023).

Based on Ireland's previous experiences as a member of the Euro Area, overheating could coincide with rising wage and price pressures, rapidly rising debt, a deterioration in Ireland's current account balance, and/or faster inflows of labour from abroad (Box A). It is possible that new factors that coincide with overheating could include inflows of foreign capital into the Irish construction and property sectors and the injection of foreign-company sourced Corporation Tax receipts into domestic demand. Importantly, any above-potential growth in incomes and government revenues during this period would not be expected to be sustainable.

Adverse risks also confront the outlook for the economy, chief among them a hard Brexit. Estimates of the medium-term impacts on Ireland's real output are 1.1 per cent to 2.8 per cent for a so-called "soft Brexit" and 3.1 per cent to 7 per cent for a "hard Brexit" according to various studies (IFAC, 2018e). Other risks include changes to the international tax environment; the possibility that protectionist measures adopted by the US and other nations escalate further, thus dampening global trade; the possible onset of a wider cyclical downturn in Ireland's major trading partners; and adverse financial developments (including related to Italy).

Box A: Sustainable Growth

"Sustainable growth" in economic activity is a challenging concept to pin down. It is typically defined as an economy's medium-term potential output growth, but this definition is fraught with measurement problems and potential output growth rates may not adequately reflect an economy's sustainable pace of growth. In light of the importance of such a concept to fiscal policy and to identify an appropriate pace at which net Government spending should grow over the medium term (absent policy changes), this Box explores the concept of sustainable growth more closely.

A key question when discerning the sustainable growth rate of an economy is the basis on which this is founded. There are three standard approaches: (1) those based on purely statistical approaches; (2) those based on Phillips curve concepts that identify potential output with reference to states where inflationary pressures are non-existent or unchanging; and (3) production function approaches that appeal to Phillips curve concepts as well as to the growth rates that would prevail given full usage of factor inputs like capital and labour and the efficiency with which they can be combined (total factor productivity).

Each of these definitions is subject to a number of overlapping shortcomings, which can weaken their value in terms of determining measures of sustainable output growth. First, small and open economies that are converging on more advanced economies' level of infrastructure and technology may experience potential output growth rates that prove to be temporarily higher than the stable growth path that they eventually tend toward. Second, unsustainable booms in investment (such as that which happened in Ireland in the mid-2000s) can contribute to inflated measures of potential output growth if the definition of potential is determined by the full use of capital in the economy (as in the Commonly Agreed Methodology). Third, credit expansions can also lead to faster growth rates that are above the sustainable rate for a prolonged period of time and can inflate measures of potential output if the financial cycle is not adequately controlled for. Fourth, statistical tools typically used to identify trend or potential growth rates can exhibit tendencies toward "end-point bias" meaning that the most recent actual or forecast growth rates may exert undue influence on the potential growth rates being estimated (leading to procyclical bias: an especially dangerous feature for the purposes of determining appropriate fiscal policy). Fifth, forecast bias might further aggravate end-point bias. This can happen if, for example, it is assumed that recent momentum in the economy will continue over the forecast horizon. Sixth, a serious issue with small open economies with mobile factors of production is the possibility of multiple equilibria (multiple states in which the economy may stabilise).

A better definition of sustainable output growth for fiscal policy

For the purposes of assessing potential output in a monetary union a different conceptualisation may be warranted, especially for the purpose of assessing fiscal sustainability. A monetary union like the Euro Area may have different macroeconomic dynamics relevant for potential output, given the presence of a fixed exchange rate and the openness to trade—both of which are important for price changes—and given the increased mobility of capital and labour.

With this in mind, the Network of EU Independent Fiscal Institutions (2018) has developed a useful working definition that considers an economy's potential as the:

maximum level of output sustainable in the medium to long run, where "sustainable" implies that output, when at its potential, is not unduly influenced in any particular direction by imbalances in the economy, be they external, internal or financial.

This working definition of potential output has certain advantages over alternative definitions. First, it recognises that standard approaches may not adequately incorporate important information. This could relate to absorption cycles, the financial cycle, and/or any other temporary phenomena that inflate or depress growth conditions but which are not captured sufficiently by production functions or other standard approaches. Second, this definition accepts that multiple disequilibria can coexist in an economy. In other words, a boom in commercial property spurred by external capital might inflate potential output growth, but this might be offset by weaker-than-normal domestic credit conditions. It thereby forces the user to consider current economic conditions more broadly, recognising that there are multiple drivers of overall economic imbalances that can distort current output growth relative to its potential. Third, it moves beyond purely inflation-dependent concepts of potential output, which may be less useful outside of a central-banking context and for small open economies, especially where migration flows, for instance, can dampen the relationship between labour usage and inflationary pressures.

One motivation for moving to beyond-inflation concepts of potential output is given by the pre-crisis experiences in Ireland and Spain (Cuerpo, Cuevas, and Quilis, 2018), among others. While it is now widely accepted that the run-up to the crisis was characterised by highly unsustainable growth rates, this was not reflected to a similar extent in corresponding price pressures. One explanation for this is that—in a monetary union—other channels can matter more, including the current account balance (a measure of an economy's net exports, income and transfer flows with the rest of the world) and net migration flows. Figure A.1 highlights this feature by plotting unemployment rates against general inflation and hourly wages, but also against the current account balance and net migration. In Ireland's case, the relationship between unemployment rates and general HICP inflation has been relatively muted since 1998. Wage inflation—though high in the mid-2000s—was not especially different to earlier

rates (in part due to convergence). This meant that, as the economy strengthened prior to the crisis, the usual expectation underpinning many definitions of potential output that price pressures would emerge proved incorrect. By comparison, accumulating imbalances were clearly evident from a deepening current account deficit, and growing net migration inflows.

The failure of standard definitions of potential output to capture unsustainable growth developments prior to the last crisis is one reason why the Council favours broader assessments of sustainable growth like that formulated by the Network of EU Independent Fiscal Institutions. It is also one reason why the Council favours a "suite of models" approach to estimating potential output rather than reliance on any single estimation approach. And it is a reason why the Council emphasises the importance of a "modular" approach to assessing the economy. This involves a systematic examination of a range of economic indicators for signs of economic imbalances including in the labour market; housing and investment; credit; and external balances.







Notes: Wage inflation is hourly wage inflation and is based on the National Accounts data for "compensation of total employees", combined with the LFS definitions of employees and average weekly hours.