Ireland: Still growing fast but cyclical risks ahead

2018 sees lower unemployment, modest wage increases and another primary surplus

October 2018
Summary

Growth continues and debt dynamics improving debt sustainability

Gníomhaireacht Bainistíocht an Chisteáin Náisiúnta
National Treasury Management Agency
Macro picture is positive: Averaging five per cent growth in 2014-17; little sign of inflation

True growth healthy, but slowing?

- True growth healthy, but slowing?
- Underlying series is modified final domestic demand

Dramatic drop in unemployment rate

Inflation still low – partly thanks to Brexit

* Underlying series is modified final domestic demand
A hat-trick of primary surplus, improving debt dynamics and reduced financing needs

Ireland is improving its debt dynamics by the month

- Debt-to-GNI* (105% 2018f, from 166%)
- Debt-to-GG Revenue (255% 2018f, from 353%)
- Average interest rate (2.6% 2018f, from 5.1%)
- Debt-to-GDP^ (64% 2018f, from 120%)

NTMA has reduced near-term issuance needs (€bns)

^ due to GDP distortions, Debt to GDP is not representative for Ireland, we suggest using other measures listed.
Main risks are external and outside Ireland’s control

**Late Cycle**
Ireland is later than the Euro Area (EA) in its economic cycle thanks to its close ties to US
Slowdown invariably follows when Central Banks make money dearer and more scarce

**US**
Ireland is still a “high beta” bet on the US economy, in particular its ICT sector
Impact of US Corporate Tax reform

**Brexit**
“Hard” Brexit could impact Irish Growth by 4%-7% over a 4-5 year period
Funding environment still favourable for Ireland in 2018 - €16.5bn issued already at long maturity

**Green**
€3bn raised through the syndicated sale of Ireland’s first Sovereign Green bond. Yield of 1.399% on 2031 bond

**€16.5bn**
Funding completed within guided range of €14-18bn
Average maturity 12 years
Interest rate of 1.1%
Auction in November

**€13bn Cash**
Over €13bn expected year end cash balance. Ireland prefunded heading into more volatile times
Ignore GDP/GNP. Other metrics show Ireland is growing and closer to full employment.
Labour market shows growth story most clearly – 390,000 net new jobs in last six years

Unemployment rate: 5.4% in September 2018

Unemployment approaches 2002-06 average

Total employment back above previous peak as 100K non-construction jobs added on net

Source: CSO
Employment growth driven by high skill job creation; Full-time employment expanded by over 4% in H1 2018

Employment growth has been driven by high skilled jobs in recent years

Substantial full-time employment growth

Source: Eurostat; CSO
High Skill jobs include the ISCO08 defined groupings Managers, Professionals, Technicians and associate professionals
Labour participation has not yet recovered – young reaching labour force later

Participation rate hovering around 62%

Part. rate down as construction jobs lost and younger people stay in education longer

Rate inflated pre-crisis by migrant construction workers

Source: CSO
Wages growth evident in 2018 but growth uneven across sectors

Wage growth a driver for increase in compensation of employees…

… however disparities remain across sectors regarding wage growth

Source: CSO
Ireland’s labour market is edging closer to full employment - US and UK likely already there

Unemployment rates (%) falling across Europe; falling faster here

<table>
<thead>
<tr>
<th>Country</th>
<th>2012</th>
<th>2016</th>
<th>2017</th>
<th>18Q2</th>
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<tbody>
<tr>
<td>Germany</td>
<td>5.4</td>
<td>4.2</td>
<td>3.8</td>
<td>3.4</td>
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<td>Netherlands</td>
<td>5.8</td>
<td>6.0</td>
<td>4.9</td>
<td>3.9</td>
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<td>Austria</td>
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<td>6.0</td>
<td>5.5</td>
<td>4.7</td>
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<td>Luxembourg</td>
<td>5.1</td>
<td>6.3</td>
<td>5.6</td>
<td>5.2</td>
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<td>8.9</td>
<td>8.0</td>
<td>6.6</td>
<td>5.6</td>
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<td>Ireland</td>
<td>15.5</td>
<td>8.4</td>
<td>6.7</td>
<td>5.9</td>
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<td>7.6</td>
<td>7.9</td>
<td>7.1</td>
<td>6.0</td>
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<td>Sweden</td>
<td>8.0</td>
<td>6.9</td>
<td>6.7</td>
<td>6.2</td>
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<tr>
<td>EU 28</td>
<td>10.5</td>
<td>8.6</td>
<td>7.6</td>
<td>6.9</td>
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<tr>
<td>Portugal</td>
<td>15.8</td>
<td>11.2</td>
<td>9.0</td>
<td>7.0</td>
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<tr>
<td>Euro Area</td>
<td>11.4</td>
<td>10.0</td>
<td>9.1</td>
<td>8.3</td>
</tr>
<tr>
<td>France</td>
<td>9.8</td>
<td>10.1</td>
<td>9.4</td>
<td>9.1</td>
</tr>
<tr>
<td>Italy</td>
<td>10.7</td>
<td>11.7</td>
<td>11.3</td>
<td>10.8</td>
</tr>
<tr>
<td>Spain</td>
<td>24.8</td>
<td>19.6</td>
<td>17.2</td>
<td>15.4</td>
</tr>
</tbody>
</table>

Unemployment (%) close to lows in Ireland’s main trading partners

Source: Eurostat, 15-74 age basis; DataStream
20 year average = 1998 Q3 to 2018 Q2
## External environment less helpful for Ireland

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018/19</th>
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<tr>
<td>EA Monetary Policy</td>
<td>Accommodative</td>
<td>Accommodative</td>
<td>Accommodative</td>
<td>Less accommodative</td>
</tr>
<tr>
<td>US Monetary Policy</td>
<td>Accommodative</td>
<td>Accommodative</td>
<td>Accommodative but tightening</td>
<td>Further tightening: curve inversion?</td>
</tr>
<tr>
<td>US growth</td>
<td>Stimulative</td>
<td>Less stimulative</td>
<td>Stimulative</td>
<td>Stimulative in 2018; fiscal drag in 2019</td>
</tr>
<tr>
<td>Oil price</td>
<td>Falling</td>
<td>Falling</td>
<td>Rising</td>
<td>Rising</td>
</tr>
<tr>
<td>UK growth</td>
<td>Stimulative</td>
<td>Less favourable; Brexit impact</td>
<td>Growth slowing</td>
<td>Brexit crunch</td>
</tr>
<tr>
<td>Euro currency</td>
<td>Very Helpful</td>
<td>Helpful</td>
<td>Headwind</td>
<td>Neutral</td>
</tr>
</tbody>
</table>
GDP distortions mean we need to look to other metrics; Irish recovery evident when looking at GNI*

GNI* was €181bn in 2017; 9.4% higher than in 2007 (current prices)

GNI* growth rate averaged 7.5% 2013-2017 (current prices)

GNI* is 62% of GDP

Source: CSO

Note: See annex for discussion on the GDP distortions from 2015 onwards
Modified Domestic Demand (MDD) – a reflection of the home economy - is best cyclical indicator

MDD still growing strongly in 2018

Ireland’s PMIs are expanding but down from heights of 2016

Source: CSO; Markit, Bloomberg, Investec
Note MDD measure used here private consumption, government consumption, building investment, elements of machinery & equipment investment, elements of intangible asset investment, value of physical changes in stock. See annex for more detail.
Oil price collapse helped supercharge the economy in 2015; but steady recovery of Brent is a headwind

Oil price shock boosted GDP by close to 1.5% in 2015

Ireland is a price taker for energy - 0.6% of GNI* cost increase in last 24 months

Source: CEPR: Oil and the Euro Area Economy

*impact over 1 year. Oil price shock in 2015 was c.50% implies 1 year impact close to 1.5%.

Source: DataStream, CSO
Recovery has not been driven by credit so far

Lending for house purchase only edging into positive territory recently

House building catch-up will boost the economy in 2018

Source: CBI; CSO
Note: Credit to business series excludes financial intermediation and property related credit
Note Modified investment excludes impact of imports of intangible and aircraft leasing assets
Export growth has slowed in recent quarters

Exports outside MNC-dominated sectors have slowed

Ireland’s exports are dominated by two main sectors (2018 data)

Chemical products, €43bn, 29%

Computer Services, €39bn, 26%

All other exports, €68bn, 45%

Source: CSO
Note: Nominal values used. Excludes contract manufacturing
Consumer spending growth is driven by rising incomes rather than recourse to debt

Private consumption grew at 3.3% y-o-y in Q2 2018

Services consumption driving recent consumption growth

Source: CSO; Eurostat
Private debt levels are high but improving

Household debt ratio has decreased due to deleveraging and increasing incomes

Debt to after-tax income* improving (137%) but among highest in Europe

Source: CBI
Source: Eurostat (Q1 2018)

*Measure excludes “other liabilities” from household debt.
Saving rate lower in recent years, facilitating consumption and slower pace of deleveraging

Gross household saving rate lower than peak but healthy 8-10%

Interest burden down to only 4% of disposable income from peak of 11%

Source: Eurostat, ONS, CSO; CBI, Eurostat NTMA calculations

Note: Gross Savings as calculated by the CSO has tended to be a volatile series in the past, some caution is warranted when interpreting this data
Despite being late cycle, inflation is low; Ireland’s *Phillips Curve* may be “kinked”

- **Inflation (%) in Ireland** lower than EA due mostly to sterling weakness post-Brexit vote

- **Wage growth** a natural consequence of improving labour conditions (1999-2021)
  - $y = -0.7422x + 0.0966$
  - $R^2 = 0.79$

**Source:** CSO, NTMA analysis *red dots are Budget 2019 forecasts (2018-2020); Non-Agriculture employment /wage data*
Ireland is well funded while the Government deficit has nearly closed.
Ireland has beaten EU targets for seven straight years

General Government Balance (excl. banking interventions)

Surplus forecast in euro terms in 2020 (€bn)

Source: CSO; Department of Finance
In recent years Ireland has run primary surpluses that reduced debt ratios.

Ireland has improved its debt dynamics: next step is to follow others and run GGB surplus.

Source: CSO; NTMA calculation
Note: Debt Stabilising primary balance is the primary balance it is necessary to run in a year to keep the debt-to-GNI* ratio from rising given the average interest rate and growth in that year.
Gross Government debt forecasted to be 64% of GDP at end-2018; 105% of GNI*; reality somewhere in between

Debt-to-GNI* ratio is high but has declined quickly

Source: CSO; Department of Finance
Alternative debt service metrics must also be used for Ireland e.g. General Government debt to GG Revenue

Source: Eurostat, CSO; Department of Finance
It’s best to analyse Irish debt with broad range of metrics

<table>
<thead>
<tr>
<th>2017</th>
<th>GG debt to GG revenue %</th>
<th>GG interest to GG rev %</th>
<th>GG debt to GDP %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greece</td>
<td>365.8%</td>
<td>6.5%</td>
<td>178.6%</td>
</tr>
<tr>
<td>Portugal</td>
<td>292.9%</td>
<td>9.0%</td>
<td>125.7%</td>
</tr>
<tr>
<td>Italy</td>
<td>282.9%</td>
<td>8.2%</td>
<td>131.8%</td>
</tr>
<tr>
<td>Ireland</td>
<td>263.0% (255%)</td>
<td>7.6%* (6.5%)</td>
<td>68.0%** (64%)</td>
</tr>
<tr>
<td>Spain</td>
<td>259.4%</td>
<td>6.8%</td>
<td>98.3%</td>
</tr>
<tr>
<td>Cyprus</td>
<td>244.1%</td>
<td>8.0%</td>
<td>97.5%</td>
</tr>
<tr>
<td>UK</td>
<td>220.8%</td>
<td>6.9%</td>
<td>87.7%</td>
</tr>
<tr>
<td>Belgium</td>
<td>201.5%</td>
<td>4.8%</td>
<td>103.1%</td>
</tr>
<tr>
<td>EA19</td>
<td>187.7%</td>
<td>4.3%</td>
<td>86.7%</td>
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<td>EU28</td>
<td>181.8%</td>
<td>4.4%</td>
<td>81.6%</td>
</tr>
<tr>
<td>France</td>
<td>180.0%</td>
<td>3.3%</td>
<td>97.0%</td>
</tr>
<tr>
<td>Slovenia</td>
<td>170.8%</td>
<td>5.8%</td>
<td>73.6%</td>
</tr>
<tr>
<td>Austria</td>
<td>162.1%</td>
<td>3.8%</td>
<td>78.4%</td>
</tr>
<tr>
<td>Germany</td>
<td>142.0%</td>
<td>2.3%</td>
<td>64.1%</td>
</tr>
<tr>
<td>Slovakia</td>
<td>129.2%</td>
<td>3.5%</td>
<td>50.9%</td>
</tr>
</tbody>
</table>

Source: Eurostat, IE figures in brackets are 2018 forecast from the Department of Finance
*Closer to 6.5% of GG Revenue if you exclude the interest paid to CBI. Other countries would also see their interest % of GG Revenue fall under this treatment but Ireland’s would fall by more given amount held by CBI (FRNs etc.)
** 111% Debt to GNI* ratio
Snowball Effect (i-g) in Ireland’s favour given lower average interest rate

Source: CSO; Department of Finance
Corporation tax revenue surprising positively but exposed to concentration risk

Corporation tax receipts have doubled in four years

Since 2014 c.40% of CT paid by 10 companies

Income tax base intact - not comparable to narrowing of base pre-crisis

Source: Department of Finance
Over 50% of Irish debt stock held by “sticky” sources

Source: CSO, ECB, NTMA Analysis
*excludes those held by Eurosystem. Euro system holdings include SMP, PSPP and CBI holdings of FRNs. Figures do not include ANFA holdings which are likely to further increase the Eurosystem’s holdings.
** Includes IMF, EFSF, EFSM, Bilateral as well as IBRC-related liabilities.
Retail includes State Savings and other currency and deposits. The CSO series has been altered to exclude the impact of IBRC on the data.
Maturity profile – IMF repayment and FRN buy-backs reduced refinancing risk; Green diversifies investor base

Source: NTMA

Note: EFSM loans are subject to a 7-year extension that will bring their weighted-average maturity from 12.5 years to 19.5 years. It is not expected that Ireland will refinance any of its EFSM loans before 2027. As such we have placed the pre-2027 EFSM loan maturity dates in the 2027-30 range although these may be subject to change.
The NTMA improved Ireland’s 2018-2020 maturity profile in recent years

Various operations have extended the maturity of Government debt …

...Ireland (in years) now compares favourably to other EU countries

Source: NTMA; ECB

*excludes programme loans. Ireland’s maturity including these loans is still similar.
Funding strategy has lowered the State’s interest burden

NTMA issued €55bn MLT debt since 2015; 13.5 yr weighted maturity, avg. rate of 1.1%

Interest costs were expected to reach almost €10bn but now are below €5.5bn a year

Source: NTMA, CSO, Department of Finance

Other issuance includes inflation linked bonds, private placement and amortising bonds
The State is funded three to four quarters in advance

- Our next bond redemption will be in June 2019 - €8.9bn.
- On January 3rd, the NTMA issued a new 10 year benchmark bond via syndication. €4bn was raised at a yield of 0.944%.
- On April 10th, the NTMA issued a new 15 year benchmark bond via syndication. €4bn was raised at a yield of 1.319%.
- In February/March/May/July/September a further €5.5bn was raised by auction across four bonds.
- In October, Ireland issued its first Sovereign Green Bond through syndication. It raised €3bn on a 12y bond at 1.399%.
- Forecast for end-2018 cash is €13.3bn.

Source: NTMA

- EBR is the Exchequer Borrowing Requirement (DOF estimate)
- Cash balances excludes non-liquid asset classes such as Housing Finance Agency (HFA) Guaranteed Notes.
- Other outflows includes bond buybacks, switches, contingencies and potential bond purchases.
- Other funding includes Retail (State Savings).
- Rounding may occur.
Late cycle risks mixed for Ireland: rates may remain low but end of ECB bond buying may expose credit spread

If US yield curve inverts, recession is likely to follow – keeping base rates at zero*

In euro area, PSPP is ending as tightening cycle starts very slowly

*Shaded areas indicate recessionary periods in the US

Source: DataStream
Investor base for Government bonds is wide and varied

**Investor breakdown:**
Average over last 5 syndications

- Fund/Asset Manager: 38%
- Banks/Central Banks: 36%
- Pensions/Insurance: 13%
- Other: 13%

**Country breakdown:**
Average over last 5 syndications

- Ireland: 9.4%
- UK: 32%
- Continental Europe: 9.2%
- US and Canada: 2.4%
- Other: 41%

Source: NTMA
Ireland issued 2031 Sovereign Green Bond in October 2018

- €3bn Final order book of €11.3bn
  95% to non-Irish investors
  UK 23%; Germany/Austria and France 19% each; Nordics 12%; Benelux 11%

- 1.399% 2031 maturity priced at MS+12 bps

- New demand
  Increased demand from the three established centres for green investment
  France 19%, the Netherlands 9% and Nordics 12%

- Green Bond Framework aligned with the ICMA Green Bond Principles [see slide 78]
- 1 in 5 euros in the National Development Plan to be spent on green projects [see slide 79]

Source: NTMA
Further details are available at ntma.ie
## Breakdown of Ireland’s General Government debt

<table>
<thead>
<tr>
<th></th>
<th>€ Billion</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
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<tbody>
<tr>
<td><strong>Currency and deposits</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(mainly retail debt)</td>
<td></td>
<td>62.1</td>
<td>31.4</td>
<td>20.9</td>
<td>20.7</td>
<td>21.3</td>
<td>21.6</td>
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<tr>
<td><strong>Securities other than</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>shares, exc. financial</td>
<td></td>
<td>87.3</td>
<td>112.7</td>
<td>119.1</td>
<td>125.8</td>
<td>124.2</td>
<td>130.7</td>
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<td>derivatives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Short-term (T-Bills, CP</td>
<td></td>
<td>2.6</td>
<td>2.4</td>
<td>3.8</td>
<td>1.4</td>
<td>2.4</td>
<td>2.9</td>
</tr>
<tr>
<td>etc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Long-term (MLT bonds)</td>
<td></td>
<td>84.8</td>
<td>110.3</td>
<td>115.3</td>
<td>124.4</td>
<td>121.8</td>
<td>127.8</td>
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<tr>
<td><strong>Loans</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>60.6</td>
<td>71.3</td>
<td>63.4</td>
<td>55.1</td>
<td>55.2</td>
<td>49.0</td>
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<tr>
<td>- Short-term</td>
<td></td>
<td>1.9</td>
<td>1.4</td>
<td>1.3</td>
<td>1.0</td>
<td>0.7</td>
<td>0.5</td>
</tr>
<tr>
<td>- Long-term (official</td>
<td></td>
<td>58.7</td>
<td>69.9</td>
<td>62.1</td>
<td>54.1</td>
<td>54.6</td>
<td>48.5</td>
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<td>funding and prom notes</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2009-12)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>General Government Debt</strong></td>
<td></td>
<td>210.0</td>
<td>215.3</td>
<td>203.4</td>
<td>201.6</td>
<td>200.7</td>
<td>201.3</td>
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<tr>
<td><strong>EDP debt instrument</strong></td>
<td></td>
<td>57.9</td>
<td>53.9</td>
<td>36.1</td>
<td>29.0</td>
<td>24.9</td>
<td>27.3</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Net Government debt</strong></td>
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<td>152.1</td>
<td>161.4</td>
<td>167.3</td>
<td>172.6</td>
<td>175.8</td>
<td>174.0</td>
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</tbody>
</table>

*Source: CSO*
Central Bank of Ireland holdings increase domestic share of Irish Government bonds (IGBs) through PSPP

<table>
<thead>
<tr>
<th>€ Billion</th>
<th>End quarter</th>
<th>Dec 2014</th>
<th>Dec 2015</th>
<th>Dec 2016</th>
<th>Dec 2017</th>
<th>Q2 18</th>
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<tr>
<td>1. Resident</td>
<td></td>
<td>50.8</td>
<td>50.8</td>
<td>56.1</td>
<td>56.1</td>
<td>58.0</td>
</tr>
<tr>
<td>(as % of total)</td>
<td></td>
<td>(43.7%)</td>
<td>(40.6%)</td>
<td>(46.1%)</td>
<td>(44.2%)</td>
<td>(42.5%)</td>
</tr>
<tr>
<td>– Credit Institutions and Central Bank*</td>
<td></td>
<td>45.9</td>
<td>46.9</td>
<td>51.1</td>
<td>51.7</td>
<td>53.5</td>
</tr>
<tr>
<td>– General Government</td>
<td></td>
<td>1.6</td>
<td>0.8</td>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>– Non-bank financial</td>
<td></td>
<td>2.9</td>
<td>2.8</td>
<td>4.3</td>
<td>3.8</td>
<td>3.9</td>
</tr>
<tr>
<td>– Households (and NFCs)</td>
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<td>0.4</td>
<td>0.3</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>2. Rest of world</td>
<td></td>
<td>65.5</td>
<td>74.2</td>
<td>65.5</td>
<td>70.9</td>
<td>78.5</td>
</tr>
<tr>
<td>(as % of total)</td>
<td></td>
<td>(56.3%)</td>
<td>(59.4%)</td>
<td>(53.9%)</td>
<td>(55.8%)</td>
<td>(57.5%)</td>
</tr>
<tr>
<td>Total MLT debt</td>
<td></td>
<td>116.3</td>
<td>125.1</td>
<td>121.6</td>
<td>127.0</td>
<td>136.4</td>
</tr>
</tbody>
</table>

Source: CBI
Ireland: “A” grade from all major credit rating agencies

<table>
<thead>
<tr>
<th>Rating Agency</th>
<th>Long-term</th>
<th>Short-term</th>
<th>Outlook/Trend</th>
<th>Date of last change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard &amp; Poor's</td>
<td>A+</td>
<td>A-1</td>
<td>Stable</td>
<td>June 2015</td>
</tr>
<tr>
<td>Fitch Ratings</td>
<td>A+</td>
<td>F1+</td>
<td>Stable</td>
<td>Dec 2017</td>
</tr>
<tr>
<td>Moody's</td>
<td>A2</td>
<td>P-1</td>
<td>Stable</td>
<td>Sept 2017</td>
</tr>
<tr>
<td>DBRS</td>
<td>A(high)</td>
<td>R-1 (middle)</td>
<td>Stable</td>
<td>March 2016</td>
</tr>
<tr>
<td>R&amp;I</td>
<td>A</td>
<td>a-1</td>
<td>Stable</td>
<td>Jan. 2017</td>
</tr>
</tbody>
</table>

Source: Bloomberg
Section 3: Brexit

Softer Brexit would limit the impact on Ireland but no deal remains a possibility.
Brexit path still shrouded in mist

- July 18: Chequers proposal for “soft” Brexit
- Oct 18: EU summit – possible agreement on withdrawal
- Dec 18: European Council – last practical date for withdrawal deal to be agreed
- Jan/Feb 2019: UK parliament approval
- Q1 2019: EU approval
- 29 Mar 2019: Brexit day
- 2019/20: Transition deal may come into effect
- Mid 2020s: Full trade deal agreed

Failure to agree at key points could lead to no deal scenario

“Hard” Brexit

Softer Brexit
Whether “hard” or “soft” Brexit materialises, trade is likely to be negatively impacted

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>27.1</td>
<td>20.5</td>
<td>10.5</td>
</tr>
<tr>
<td>UK*</td>
<td>13.4</td>
<td>23.6</td>
<td>16.0</td>
</tr>
<tr>
<td>NI</td>
<td>1.6</td>
<td>1.6</td>
<td>n/a</td>
</tr>
<tr>
<td>EU-27</td>
<td>36.5</td>
<td>31.3</td>
<td>33.4</td>
</tr>
<tr>
<td>China</td>
<td>4.1</td>
<td>5.7</td>
<td>2.7</td>
</tr>
<tr>
<td>Other</td>
<td>18.8</td>
<td>18.9</td>
<td>37.4</td>
</tr>
</tbody>
</table>

Irish/UK trade linkages will suffer following Brexit
- The UK is the second largest single-country export destination for Ireland’s goods and the largest for its services
- At the same time, Ireland imports 20-25% of its goods from the UK. Consumer goods, capital equipment and inputs into the export process will become cheaper thanks to FX.

There is significant employment related to Ireland’s trade with the UK
- The UK might only account for 14-15% of Ireland’s total exports, but Ireland is more dependent than that, when you consider the employment related to those exports

SMEs account for over 55% of IE exports to UK. They are likely to be more affected than larger companies by the introduction of tariffs and barriers to trade.

Source: CSO 2016/2017 * UK data includes Northern Ireland NTMA calculations; Data does not include contract manufacturing
Breakdown of exports to the UK: important trade partner especially so in smaller sectors (agri-food products)

UK is 13-14% of goods exports but very important partner in many small sectors

UK is 16% of services exports but not the majority trading partner in any segment

Red Box includes many small export sectors that UK is significant % of

Source: CSO goods 2017 data, services 2016 data
The size of bubble relates to the sector’s importance to Ireland’s exports
“Hard” Brexit could cost Ireland 4-7% of output

Estimated Trade Reductions in “WTO rules Hard Brexit” Scenario

<table>
<thead>
<tr>
<th>Country</th>
<th>% of exports lost with UK</th>
<th>% of total exports lost</th>
<th>% of UK exports lost with EU partner</th>
<th>% of total UK Exports lost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ireland</td>
<td>30.6</td>
<td>4.2</td>
<td>27.6</td>
<td>1.5</td>
</tr>
<tr>
<td>Belgium</td>
<td>35.1</td>
<td>3.1</td>
<td>25.7</td>
<td>1.0</td>
</tr>
<tr>
<td>Spain</td>
<td>38.6</td>
<td>2.9</td>
<td>25.6</td>
<td>0.7</td>
</tr>
<tr>
<td>Germany</td>
<td>34.1</td>
<td>2.5</td>
<td>19.4</td>
<td>2.0</td>
</tr>
<tr>
<td>Denmark</td>
<td>39.8</td>
<td>2.5</td>
<td>24.4</td>
<td>0.2</td>
</tr>
<tr>
<td>Portugal</td>
<td>33.0</td>
<td>2.2</td>
<td>27.7</td>
<td>0.1</td>
</tr>
<tr>
<td>EU Total</td>
<td>30.5</td>
<td>2.1</td>
<td>22.3</td>
<td>9.8</td>
</tr>
<tr>
<td>Poland</td>
<td>30.6</td>
<td>2.1</td>
<td>20.8</td>
<td>0.3</td>
</tr>
<tr>
<td>NL</td>
<td>22.1</td>
<td>2.0</td>
<td>15.6</td>
<td>0.9</td>
</tr>
<tr>
<td>Italy</td>
<td>29.9</td>
<td>1.7</td>
<td>26.9</td>
<td>0.8</td>
</tr>
<tr>
<td>France</td>
<td>24.9</td>
<td>1.6</td>
<td>20.9</td>
<td>1.2</td>
</tr>
<tr>
<td>Greece</td>
<td>28.4</td>
<td>1.2</td>
<td>27.2</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Estimated GDP impact “WTO rules Hard Brexit” Scenario

Source: CE, ESRI and Department of Finance analysis
Some foreign banks have already announced that they will set up in Dublin after Brexit

**FDI: Ireland may benefit**

- Ireland could be a beneficiary from displaced FDI. The chief areas of interest are:
  - Financial services
  - Business services
  - IT/new media.

- Dublin is primarily competing with Frankfurt, Paris, Luxembourg and Amsterdam for financial services.

- Ireland’s FDI opportunity will depend on the outcome of post-exit trade negotiations. The UK (City of London) is almost certain to lose its EU passporting rights on exit, so there may be more opportunities in time.
Ireland’s long run future looks bright. Demographics, educated workforce and retaining competitiveness are all key.
Much rebalancing has taken place – Ireland’s structural growth drivers have reasserted.

Gross National Income* at current prices (1995=100)

Ireland’s GNI* per capita hit 2007 levels and compares favourably to EA

Source: CSO, Eurostat
Ireland’s population profile healthier than the EU average

Ireland’s population jumped to 4.79m in 2017 – up 200,000 on the 2011 Census

- 47% of Ireland’s population aged 34 or below versus 39% for EU

Ireland’s population will remain younger than most of its EA counterparts

Source: Eurostat (2017) CSO; OECD population projections
Favourable population characteristics underpin debt sustainability over longer term: next 10 years look great.

Regional data show Ireland’s mix of young and old among the best in EU.

Ireland’s Working-Age Population expected to grow in coming years (2018-2028)

Source: Eurostat; Regional NUTS2 basis
Note: Each dot is a NUTS2 region in the EU. Y-axis is inverted.

Source: Oxford Economics forecasts
Openness to immigration has been beneficial to Ireland

Latest Census data show net migration positive since 2015 – mirroring economy

Highly educated migrants moving to Ireland “Reverse Brain Drain”

Source: CSO
Openness to trade is also central to Irish success – led by services exports; Brexit may hinder export-led growth

Cumulative post-crisis total exports (4Q sum to end-2008 = 100, current prices)

Ireland benefits from export diversification by destination

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>27.1</td>
<td>20.5</td>
<td>10.5</td>
</tr>
<tr>
<td>UK</td>
<td>13.4</td>
<td>23.6</td>
<td>16.0</td>
</tr>
<tr>
<td>EU-27</td>
<td>36.5</td>
<td>31.3</td>
<td>33.4</td>
</tr>
<tr>
<td>China</td>
<td>4.1</td>
<td>5.7</td>
<td>2.7</td>
</tr>
<tr>
<td>Other</td>
<td>18.8</td>
<td>18.9</td>
<td>37.4</td>
</tr>
</tbody>
</table>

Source: CSO, NTMA calculations, * Contract manufacturing proxy
Ireland’s goods exports respond vigorously to euro movements – in both directions

- A 1% depreciation of the euro increases Irish goods exports to the US by 1%
- The equivalent response for exports to the UK is 1.1% and to the rest of world is 0.8%. Brexit has the opposite effect on Irish exports.
- The EUR/USD exchange rate has a positive effect (elasticity of 0.4) on Irish goods exports to the euro area, due to Ireland-based multinational companies’ exports to EA for onward sale to the rest of the world.
- The elasticity of total goods exports excluding pharma to the exchange rate >1

**Response (% chg.) of Irish goods exports to 1% depreciation of the euro**

<table>
<thead>
<tr>
<th>Region</th>
<th>EXP</th>
<th>EXL</th>
<th>PHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>1.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EA</td>
<td>0.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROW</td>
<td>0.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXP EXL</td>
<td>1.08</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: CSO; NTMA empirical analysis

Note: All coefficients significant at 99% level; not affected by contract manufacturing. Time period is 1998 to 2016 Q2. For longer time periods, the UK elasticity is smaller (closer to 0.4-0.5 for 1981 onwards).
Crucially, openness to overseas capital has played a big part in Ireland’s economic development

Average FDI inflow in $ per capita, 2012–17

Ireland has attracted high-quality jobs

Source: Unctad (UN) database, Eurostat
Note: Luxembourg excluded for presentation purposes – average $39,800 per capita over period.
Note 2: High tech = High-technology manufacturing and knowledge-intensive high-technology services
All this leads to mixture of highly productive and labour intensive sectors in Ireland

Source: CSO, NTMA calculations, 2017 data
Ireland is pretty competitive now; we need to avoid repeat of the mid-2000s

Nominal Labour Cost Ratio – IE vs Euro Area

Unemployment back towards 1999-2007 level, but wage growth less than half


Source: CSO, Eurostat, NTMA calculations


Unemployment

Sept 2018 5.4%

Ireland competitive versus euro area

Comp. of Emp. per employee growth

2018f
Ireland’s strong fundamentals highlighted by performance on United Nations sustainability index

<table>
<thead>
<tr>
<th>Selected Countries</th>
<th>Global Rank</th>
<th>Index Score (0-100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>1</td>
<td>85.6</td>
</tr>
<tr>
<td>Denmark</td>
<td>2</td>
<td>84.2</td>
</tr>
<tr>
<td>Finland</td>
<td>3</td>
<td>84.0</td>
</tr>
<tr>
<td>Norway</td>
<td>4</td>
<td>83.9</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>5</td>
<td>81.9</td>
</tr>
<tr>
<td>Germany</td>
<td>6</td>
<td>81.7</td>
</tr>
<tr>
<td>France</td>
<td>10</td>
<td>80.3</td>
</tr>
<tr>
<td>Belgium</td>
<td>12</td>
<td>80.0</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>16</td>
<td>78.3</td>
</tr>
<tr>
<td><strong>Ireland</strong></td>
<td><strong>19</strong></td>
<td><strong>77.9</strong></td>
</tr>
<tr>
<td>Spain</td>
<td>25</td>
<td>76.8</td>
</tr>
<tr>
<td>Portugal</td>
<td>28</td>
<td>75.6</td>
</tr>
<tr>
<td>Italy</td>
<td>30</td>
<td>75.5</td>
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<tr>
<td>Luxembourg</td>
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<td>75.0</td>
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<tr>
<td>Greece</td>
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<td>72.9</td>
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<tr>
<td>United States</td>
<td>42</td>
<td>72.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ireland</th>
<th>Global rank</th>
<th>Vs. Regional Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjective Wellbeing (2016)</td>
<td>13/133</td>
<td></td>
</tr>
<tr>
<td>Environmental Performance Index (2016)</td>
<td>19/155</td>
<td></td>
</tr>
<tr>
<td>Human Development Index (2016)</td>
<td>8/157</td>
<td></td>
</tr>
<tr>
<td>Global Competitiveness Index (2016/17)</td>
<td>21/134</td>
<td></td>
</tr>
<tr>
<td>Global Peace Index (2016)</td>
<td>12/149</td>
<td></td>
</tr>
</tbody>
</table>

Source: United Nations SDG project
Ireland’s performs well versus peers in particular on governance metrics

Ireland is close to OECD norms on social issues

Ireland scores well on metrics such as property rights and government efficiency

<table>
<thead>
<tr>
<th>UN Goal – Peace, Justice and Strong institutions</th>
<th>Ireland Actual Figure</th>
<th>Ireland Normalised (world leader = 100)</th>
<th>OECD Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>-</td>
<td>87.5</td>
<td>75.8</td>
</tr>
<tr>
<td>Corruption Perception Index (0-100)</td>
<td>73.0</td>
<td>79.4</td>
<td>73.5</td>
</tr>
<tr>
<td>Government Efficiency (1-7)</td>
<td>4.8</td>
<td><strong>74.8</strong></td>
<td><strong>52.8</strong></td>
</tr>
<tr>
<td>Homicides (per 100,000 people)</td>
<td>1.1</td>
<td>97.8</td>
<td>96.1</td>
</tr>
<tr>
<td>Prison population (per 100,000 people)</td>
<td>80.0</td>
<td>87.8</td>
<td>74.6</td>
</tr>
<tr>
<td>Property Rights (1-7)</td>
<td>6.1</td>
<td><strong>94.8</strong></td>
<td><strong>73.1</strong></td>
</tr>
<tr>
<td>Population who feel safe walking alone at night (%)</td>
<td>75.0</td>
<td>73.7</td>
<td>67.4</td>
</tr>
</tbody>
</table>

Source: United Nations SDG project
Section 5: Property

Property prices are rising thanks to lack of supply and capital inflows
Housing supply still below demand but slowly catching up

Housing Completions above 19,000 in 2017 but still low historically (000s)

New dwellings* make up 75% of housing completions: some debate about the rest

* Housing completions derived from electrical grid connection data for a property. Reconnections of old houses or connections from “ghost estates” overstate the annual run rate of new building.

Source: DoHPCLG, CSO
Demand has picked up since 2015; Credit slowly increasing as cash buyers become less important

Mortgage drawdowns rise from deep trough (000s)

Non-mortgage transactions still important but falling towards 40% of total

Source: BPFI; Residential Property Price Register

*4 quarter sum used
Property prices have rebounded strongly since 2012

House prices rising strongly but some way off peak (Y-o-Y change, RHS peak =100)

Office leads commercial property (peak = 100)

Source: CSO; IPD
CBI’s macro-prudential rules increase resilience of banking and household sector

CBI’s amended macro-prudential rules

• First time buyers (FTBs) can borrow 90% of the value of a home (10% minimum deposit). Five per cent of the total new lending to FTBs will be allowed above the 90% LTV limit.

• For second and subsequent buyers (SSBs), banks must restrict lending for primary dwelling purchase above 80 per cent LTV to no more than 20 per cent of new lending to SSBs.

• Bank must restrict lending for primary dwelling purchase above 3.5 times LTI to no more than 20 per cent of that aggregate value for FTBs and 10 per cent for SSBs.

• Banks have to limit Buy-to-Let loans (BTL) above 70 per cent LTV to 10 per cent of all BTL loans.

Transactions have slowed since macro-prudential rules introduced

Source: Residential Property Price Register
Irish house price valuations rose relative to other European countries in 2017 but remain below 2008 levels.

Deviation from average price-to-income ratio (Q1 2018, red dot represent Q1 2008)

Deviation from average price-to-rent ratio (Q1 2018, red dot represent Q1 2008)

Source: OECD, NTMA Workings

Note: Measured as % over or under valuation relative to long term averages since 1980.
Real commercial property prices still down from peak (index 1983 = 100)

Real office property price moves together with Equivalent Rental Value (rents). Price is driven by real demand in the long-run.

Bubble period

Source: IPD; NTMA

Note: IPD office price index updated to Q3 2017
Section 6: Other data

Worries about contingent liabilities no longer; Ireland now has legacy assets
Ireland has legacy banking-related assets

- **Banking**
  - Banks are now profitable; income, cost and balance sheet metrics are much improved.
  - Interest rates on mortgages and to SMEs are still high compared to EU thanks to legacy issues and the slow judicial process in accessing collateral.
  - An IPO of AIB stock (28.8%) was completed in June 2017. This returned c. €3.4bn to the Irish Exchequer.

- **NAMA**
  - NAMA has repaid 100% of its senior debt; it forecasts a profit of €3.5bn subject to market conditions.
  - This is likely to be returned to the Government coffers in the next few years.

- **IBRC**
  - Liquidation of the IBRC could ultimately return over €1bn to the Irish Exchequer.
  - The Exchequer received €280m as an interim dividend in 2016 and €270m in 2017.
All three pillar banks profitable given enhanced margins

Source: Annual reports of banks - BOI, AIB, PTSB
Profit measures are before exceptional items, 2018H1 figure annualised
Domestic bank cost base reduced over time

Cost income ratios improve dramatically…

… and IE banks* below to EU average

Source: Annual reports of Irish domestic banks, EBA

* EBA data includes three domestic banks as well as Ulster Bank, DEPFA & Citibank.
Capital ratios strengthened as banks were slimmed down and consolidated

CET 1 capital ratios (Jun-18)

Loan-to-deposit ratios have fallen significantly as loan books slimmed down

Source: Published bank accounts

Note: “Transitional” refers to the transitional Basel III required for CET1 ratios
“Fully loaded” refers to the actual Basel III basis for CET1 ratios.
Asset quality continues to improve: impaired loans and provisions fall in 2017

### Loan Asset Mix (3 banks Dec 17)

- **Consumer**: 4%
- **CRE**: 11%
- **Corporate/SME**: 23%
- **Mortgage**: 61%

### Impaired loans % (coverage %)¹ by bank and asset

<table>
<thead>
<tr>
<th>Bank</th>
<th>Irish Residential Mortgages</th>
<th>UK Residential Mortgages</th>
<th>Irish SMEs</th>
<th>UK SMEs</th>
<th>Corporate</th>
<th>CRE - Investment</th>
<th>CRE - Land/Development</th>
<th>Consumer Loans</th>
<th>Book (€bn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOI</td>
<td>9.3 (52)</td>
<td>6.0 (45)</td>
<td>1.6 (22)</td>
<td>11.1 (51)</td>
<td>4.6 (59)</td>
<td>28.5 (53)</td>
<td>84.8 (76)</td>
<td>4.1 (105)</td>
<td>24.1</td>
</tr>
<tr>
<td>AIB</td>
<td>16.6 (38)</td>
<td>13.1 (44)</td>
<td>10.8 (50)</td>
<td>11.5 (63)</td>
<td>37.4 (61)</td>
<td>38.5 (50)</td>
<td>88.6 (78)</td>
<td>19.9 (70)</td>
<td>32.2</td>
</tr>
<tr>
<td>PTSB</td>
<td>23.6 (49)</td>
<td>23.4 (49)</td>
<td>3.9 (39)</td>
<td>35.8 (69)</td>
<td>27.0 (93)</td>
<td>35.9 (53)</td>
<td>88.6 (78)</td>
<td>21.1 (49)</td>
<td>17.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>All 3 PCAR banks (€bn)</th>
<th>Dec-15</th>
<th>Dec-16</th>
<th>Dec-17</th>
<th>Book (€bn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Loans</td>
<td>186.5</td>
<td>168.9</td>
<td>160.2</td>
<td></td>
</tr>
<tr>
<td>Impaired</td>
<td>29.0</td>
<td>20.3</td>
<td>14.8</td>
<td></td>
</tr>
<tr>
<td>(Impaired as % of Total)</td>
<td>15.5%</td>
<td>12.0%</td>
<td>9.2%</td>
<td></td>
</tr>
<tr>
<td>Provisions</td>
<td>14.7</td>
<td>9.9</td>
<td>7.6</td>
<td></td>
</tr>
<tr>
<td>(Provisions as % of book)</td>
<td>7.9%</td>
<td>5.9%</td>
<td>4.7%</td>
<td></td>
</tr>
<tr>
<td>(Provisions as % of Impaired)</td>
<td>50.6%</td>
<td>48.8%</td>
<td>51.4%</td>
<td></td>
</tr>
</tbody>
</table>

1 Total impairment provisions are used for coverage ratios (in parentheses)

Source: Published bank accounts
Profitability aided by higher interest rates than EA peers

Ireland’s interest rates on lending for house purchase the highest in euro area

Rates on SME loans* over euro area average

Source: ECB

*SME loans proxy of loans <1 year and <€1m to Non-Financial Corporates
Irish residential mortgage arrears are improving across all duration categories; environment still abnormal

Mortgage arrears (90+ days)

Repossessions**

Source: CBI

- PDH mortgage arrears have fallen steadily since 2013. The smaller BTL market (c. 25% of total) has higher arrears but also saw declines in the same period.
- 116K PDH mortgage accounts were classified as restructured at end H1 2018. Of these restructured accounts, 87% were meeting the terms of the restructured arrangement.

* Over 40% of those cases in arrears > 720 days are also in arrears greater than five years.
** Four quarter sum of repossessions. Includes voluntary/abandoned dwellings as well as court ordered repossessions
NAMA: All original senior debt has been repaid; likely to deliver surplus of around €3.5bn

- **NAMA’s operating performance is strong**
  - Acquired 12,000 loans (over 60,000 saleable property units) related to €74bn par of loans of 780 debtors for €32bn
  - NAMA continues to generate net profit after impairment charges.

- **It has repaid 100% of €30.2bn of original senior debt**
  - NAMA exceeded its senior debt redemption targets well ahead of schedule. It remains on course, subject to market conditions, to redeem its small amount of subordinated debt by 2020.

- **NAMA could deliver a surplus for Irish taxpayers of about €3.5bn, according to its management team - if current market conditions remain favourable.**

- **NAMA initiative to develop up to 20,000 housing units by 2020 – subject to commercial viability.**
  - Progress has been strong so far with 7,300 units completed from Jan 2014 – May 2018;
  - Another 2,800 under construction and 8,500 have planning permission granted;
  - Planning applications lodged or will be lodged in 2018 for a further 8,600 units

More NAMA information available on [www.nama.ie](http://www.nama.ie)
The European Commission’s ruling on Apple’s tax affairs does not change the NTMA’s funding plans

- The EC has ruled that Ireland illegally provided State aid of up to €13bn, plus interest to Apple. This figure is based on the tax foregone as a result of a historic provision in Ireland’s tax code. This was closed on December 31st 2014.

- **This case has nothing to do with Ireland’s corporate tax rate.** In its press release the EC stated: “This decision does not call into question Ireland’s general tax system or its corporate tax rate”.

- **Apple is appealing the ruling, as is the Irish Government.** This process could be lengthy. Pending the outcome of the appeal, Apple has paid approximately €13bn plus EU interest into an escrow fund.

- Bank of New York Mellon has been selected for the provision of escrow agency and custodian services to hold and administer the fund.

- Amundi, BlackRock Investment Management (UK) Limited and Goldman Sachs Asset Management International have been selected for the provision of investment management services for the fund.

- As the funds will be held in escrow pending the outcome of the appeal, **the NTMA has made no allowance for these funds.**
Irish Sovereign Green Bond Framework aligned with the ICMA Green Bond Principles

Use of Proceeds
Sustainable Water, Clean Transportation, Energy Efficiency, Climate Change Adaptation & others

Project Evaluation and Selection Process
Working Group established by Government: NTMA, DPER, DCCAE & DFIN

Management of Proceeds
Pending its allocation to Eligible Green Projects, Ireland will temporarily hold proceeds in its Central Fund.

Reporting
Annual Allocation Report & Biennial Eligible Green Project Impact Report

External Verification

Source: NTMA
Further details are available at ntma.ie
Government’s NDP outlines green projects; aim to cut CO$_2$ emissions by at least 80% by 2050

1 in 5 euros in the NDP to be spent on green projects

Sustainable Mobility
€8.6 billion

Sustainable Management of Water and Environmental Resources
€6.8 billion

Transition to a Low carbon and Climate Resilient Society
€7.6 billion

Total: €23 billion (13% of GNI*)
Annex

Explanatory charts about the distortions to Ireland’s National Accounts
Distortions to GDP/GNP make them sub-optimal indicators of economic performance

Substantial activity from multinationals from 2015 onwards distorted the national accounts

Source: CSO; Department of Finance
Reclassification of several companies and “onshoring” of IP led to step change in GDP & capital stock

Source: CSO; Department of Finance
*due to confidentiality some sector data for 2015 has been restricted
The change in capital stock resulted in large increase in net exports

- The capital stock expanded in 2015 by c. €300bn or c. 40%. This is due to:
  - Re-domiciling/inversions of several multinational companies
  - The “onshoring” of IP assets into Ireland by multinationals
  - The movement of aircraft leasing assets in Ireland.
- The transfer of whole entities and assets of this size is not something seen before in Ireland.
- Goods produced by the additional capital were mainly exported. Complicating matters, the goods were produced through “contract manufacturing” (explained in detail overleaf).
- Little or no employment in Ireland results from this contract manufacturing.

Source: CSO
Contract manufacturing (CM) overstates the extent of goods export growth in the last three years

- Contract manufacturing (CM) occurs where a company in Ireland engages another abroad to manufacture products on its behalf.

- Crucially, the foreign contract manufacturer supplies a manufacturing service to the Irish entity but the overseas contractor never takes ownership of the product. When the product is sold abroad, a change of *economic* ownership takes place between Ireland and the country where the product is sold.

- This export is recorded in Ireland’s statistics even though it was never produced in Ireland.

- Previously, CM did not have a significant net impact on GDP as the company would send royalties back to where the intellectual property (IP) was “owned” – it was a royalty import. Now that the IP is here, Ireland’s GDP is artificially inflated.

*Contract manufacturing proxy is calculated as the difference between the monthly International trade exports statistics and the National Accounts/BOP measure for goods exports. The monthly data is based on the actual volume of goods flowing through Ireland’s various ports/airports whereas the national accounts/BOP makes adjustments for, among other items, contract manufacturing.*
Investment distorted by multinationals importing intellectual property (IP) into Ireland

- Investment is above the pre-crisis level due to MNCs importing intangibles into Ireland.

- Ireland has become an ICT hub in recent years with this investment impacting the real economy.

- However the recent sharp increase in intangibles investment overstates Ireland’s position and should be discounted accordingly.

- Building investment grew by 12% in H1 2018 versus H1 2017 highlighting pent up demand for housing.

Source: CSO.
GNI* is a better measure of underlying economic activity than GDP/GNP

- GDP headline numbers do not reflect the “true” growth of Ireland’s income due to MNCs.
- Reasons for 2015-17 MNC distortions:
  - Re-domiciling/inversions of several multinational companies
  - The “onshoring” of IP assets into Ireland by multinationals
  - The movement of aircraft leasing assets in Ireland.
- By modifying GNI to take account of these factors, GNI* gives us a better understanding of the underlying economy.
- GNI* only available in nominal terms at present.
- In time, GNI* will be published on a constant price basis.

<table>
<thead>
<tr>
<th>National Account – Current Prices (Euro, y-o-y growth rates)</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gross Domestic Product (GDP)</strong></td>
<td>262.4bn (34.4%)</td>
<td>273.2bn (4.1%)</td>
<td>294.1bn (7.6%)</td>
</tr>
<tr>
<td>minus Net Factor Income from rest of the world</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>= <strong>Gross National Product (GNP)</strong></td>
<td>200.4bn (22.2%)</td>
<td>222.2bn (10.8%)</td>
<td>233.1bn (4.9%)</td>
</tr>
<tr>
<td>add EU subsidies minus EU taxes</td>
<td>1.2bn</td>
<td>1.0bn</td>
<td>1.1bn</td>
</tr>
<tr>
<td>= <strong>Gross National Income (GNI)</strong></td>
<td>201.7bn (22.3%)</td>
<td>223.2bn (10.7%)</td>
<td>234.2bn (5.0%)</td>
</tr>
<tr>
<td>minus retained earnings of re-domiciled firms</td>
<td>-4.6bn</td>
<td>-5.8bn</td>
<td>-4.6bn</td>
</tr>
<tr>
<td>minus depreciation on foreign owned IP assets</td>
<td>-31.0bn</td>
<td>-36.7bn</td>
<td>-43.1bn</td>
</tr>
<tr>
<td>minus depreciation on aircraft leasing</td>
<td>-4.6bn</td>
<td>-4.9bn</td>
<td>-5.1bn</td>
</tr>
<tr>
<td>= <strong>GNI</strong>*</td>
<td>161.4bn (8.6%)</td>
<td>189.2bn (9.0%)</td>
<td>181.2bn (3.0%)</td>
</tr>
</tbody>
</table>

Source: CSO
The current account (CA) is distorted heavily by actions of MNEs – CSO has modified CA to be consistent with GNI*

Source: CSO, NTMA calculations

Modified CA = CA less (IP Depreciation + Aircraft Leasing Depreciation + Redomiciled Incomes + R&D Services Exports) adding back (Imports of related to Leasing Aircraft + R&D related IP and services Imports). Significant caution should be exercised when viewing Ireland’s current account data. MNC’s action distort metrics heavily.
Modified Domestic Demand (MDD) – which ignores the net exports channel - is best cyclical indicator

- GNI* is useful but not timely. MDD is released on a quarterly and real basis.
- MDD ignores the net exports channel. It also omits aircraft leasing and IP imports from investment to give a modified measure of domestic demand.
- The measure includes:
  - private consumption
  - government consumption
  - building investment
  - elements of machinery & equipment investment
  - elements of intangible asset investment
  - value of physical changes in stock
- This measure pegs real growth closer to 6.0% in the year to Q2 2018. Since 2014, annual growth has averaged over 5% when looking at MDD.

Source: CSO, four quarter sum growth rate used to strip out substantial quarterly volatility. Note MDD includes inventories. Large inventories in Q4 2016 added a further degree of volatility into MDD data.
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