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Approved By
European Department

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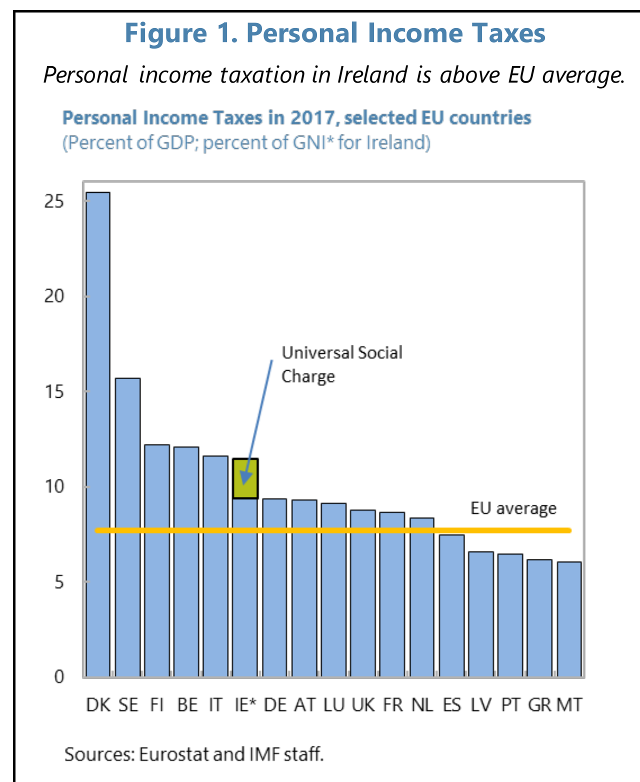
PERSONAL INCOME TAX REFORM: PAST AND PRESENT[1]

Ireland's personal income tax has undergone significant changes in the last fifteen years. From reductions during the boom, through introduction during the crisis of an additional tax – the Universal Social Charge that broadened the tax base and increased revenues –, to tax reductions with tax base narrowing in the recent recovery years. These changes resulted in a currently less efficient personal income tax system, with a high administrative burden and narrow tax base. Consideration should be given to an income tax reform, aiming at a broader tax base, reduced disincentives to work more, while preserving the overall tax yield and progressivity.

A. Introduction

1. **Personal income in Ireland is taxed under two distinct schemes.** These are the Income Tax and the Universal Social Change (USC). In 2017, the income tax yielded 9.5 percent of GNI*, while the USC collected an additional 2 percent of GNI*. Overall, Ireland ranks among EU countries with a higher share of income tax to GDP, above the EU average by several percentage points (Figure 1).

2. **Changes in Ireland's personal income taxation have been procyclical and created vulnerabilities to public finances.** This was in part the result of the interplay of corporate (CIT) and personal income taxes. During upswings, corporate profits increased and so did CIT receipts, which have been used in part to reduce personal income taxes, and vice versa during slowdowns (Figure 2). This tax policy tends to increase the volatility of the business cycle, since much of the corporate profits flow to non-residents, while changes in personal taxes directly feed into domestic demand through consumption and investment (Figure 3). In addition, the dependency on uncertain CIT revenues that are highly concentrated, and possibly not permanent, creates vulnerabilities to public finances.



[1] Prepared by Jiří Podpiera. This chapter has benefitted from comments by the discussant Joe Cullen, other participants at the Central Bank of Ireland's Workshop on May 7, 2019, in Dublin, and Barra Roantree.

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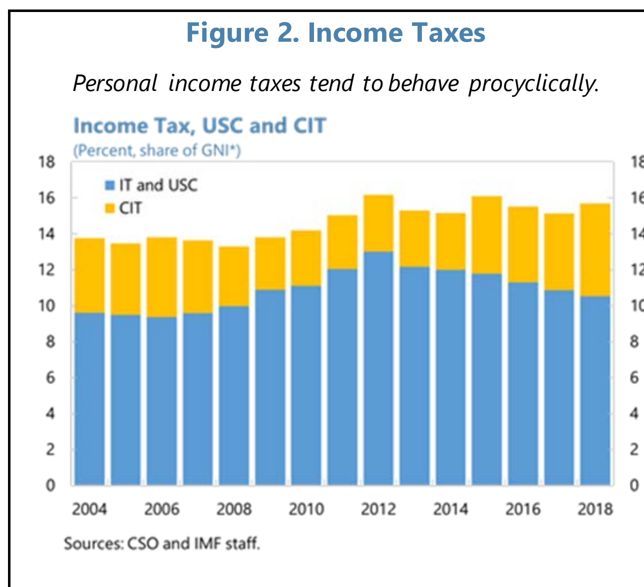
3. The reduction in personal income taxes during the boom has been broad based, albeit more for low-income taxpayers. During 2004–2007, effective tax rates were cut practically to zero for an increasing share of the lower tier of the income distribution and lowered by several percentage points for median income earners. This has gradually shifted the income tax burden towards higher income earners. While in 2004 the top 5 percent income earners paid 20 percent of total income tax revenue, in 2007 this had risen to 40 percent.

Figure 2. Income Taxes

Personal income taxes tend to behave procyclically.

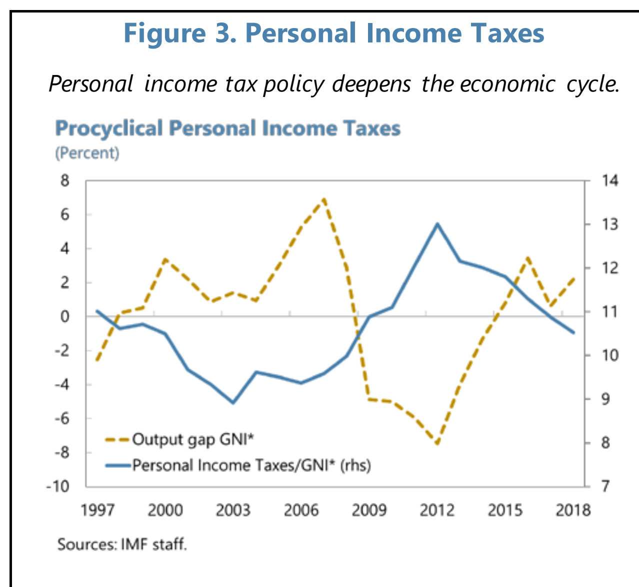


4. With somewhat shrinking corporate profits during the crisis, personal income taxation was increased.[2] The weaker CIT revenues and declines in other transactional taxes put pressure on personal income tax collection. Reversing the income tax reductions from the boom was not enough, due to reduced incomes during the crisis, and so an additional personal income tax, the USC, was introduced in 2011. The USC was a revenue-raising measure aimed also at tax broadening.

5. The recovery has seen a bounce back of CIT revenues, and personal income taxation has been gradually reduced again. By 2014, the USC was seen as the most hated tax in Ireland and was gradually lowered during 2015-19 by reducing rates and widening bands.[3] As a result, the tax-broadening effect of the USC has been largely erased, taxing the same base as the Income Tax. Its yield has been reduced from about a third of the combined Income Tax and USC in 2011, to an estimated 14 percent in 2019.[4]

Figure 3. Personal Income Taxes

Personal income tax policy deepens the economic cycle.



6. A reformed income tax may be beneficial in several ways, in line with principles of good taxation (AICPA, 2017):

[2] In addition, transactional taxes, especially stamp duties, have been abundant during the boom and allowed income tax reductions. During the crisis, they declined substantially and aggravated the need for income tax increases.

[3] "Ireland's Most Hater Tax: Universal Social Charge", *Independent.ie*; "Ireland's Much-hated Tax That Just Won't Go Away: The Universal Social Charge", *thejournal.ie*.

[4] Although there is still a difference in the tax base for the USC and Income Tax, in effectively collected tax, the two schedules tax the same tax payers.

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- It could save undue *costs for tax collection and administrative burden*, by replacing the USC with somewhat increased tax rates of the current Income Tax to *preserve current yield* of personal income taxes; and

- An introduction of additional tax bands and rates to Income Tax and appropriately calibrating their tax rates would allow preserving the progressiveness of the system, while broadening the tax base, and reducing disincentives to work more. When combined with means-tested cash transfers for low income households, it would *assure a robust, incentive-compatible and equitable tax system.*

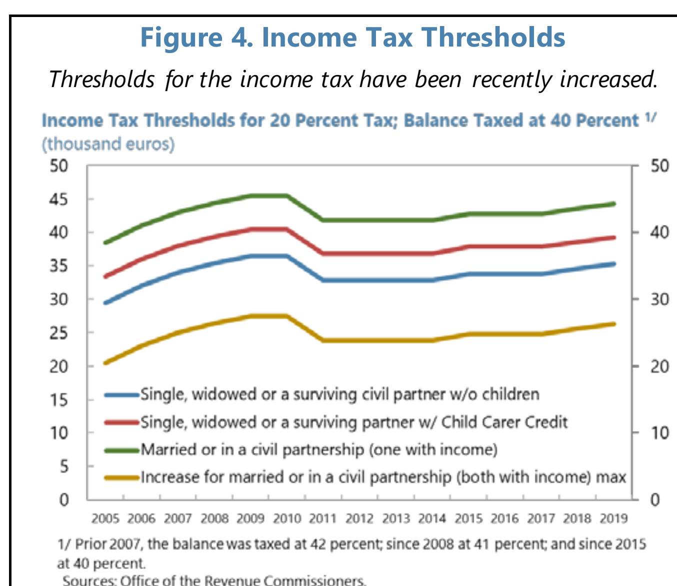
7. **The reformed income tax would reduce the vulnerability of public finances to CIT revenues and reduce procyclicality.** A robust, stable income tax system performs a stabilizing role over the business cycle, while the additional CIT revenues during booms could be saved as buffers to be used for smoothing downturns or to reduce the still high public debt.

B. The Income Tax

8. **The Income Tax is levied on total income, according to four social circumstances, and taxed in two bands** (20 percent and 40 percent). Taxable income is subject to allowances and credits according to social circumstances (single, married, etc.). Each social circumstance category also determines the upper threshold for income that is taxed at the 20 percent rate and income above the threshold is taxed at 40 percent (Table A1). The calculated tax is then adjusted for tax credits – Personal, Age, Home Carer's and Rent credits, allowances, and reliefs, and the adjusted final tax is due. The extensive use of tax credits and just two tax bands make the Irish Income Tax progressive relative to OECD peers (see IMF 2018 for an international comparison).

Figure 4. Income Tax Thresholds

Thresholds for the income tax have been recently increased.



1/ Prior 2007, the balance was taxed at 42 percent; since 2008 at 41 percent; and since 2015 at 40 percent.
Sources: Office of the Revenue Commissioners.

9. **Lowering income taxes during 2005-09 added to the boom and took place through three ways:**

- **Increasing the threshold for the higher tax rate.** Between 2005 and 2009, thresholds have increased by €7000 uniformly across tax groups, that is, about 20 percent. This ended with their reductions in 2011, to the level of 2006 (Figure 4).

- **Reducing the higher tax rate.** In 2008, the higher tax rate was reduced from 42 percent to 41 percent. This decline was not reversed during the 2011 adjustments.

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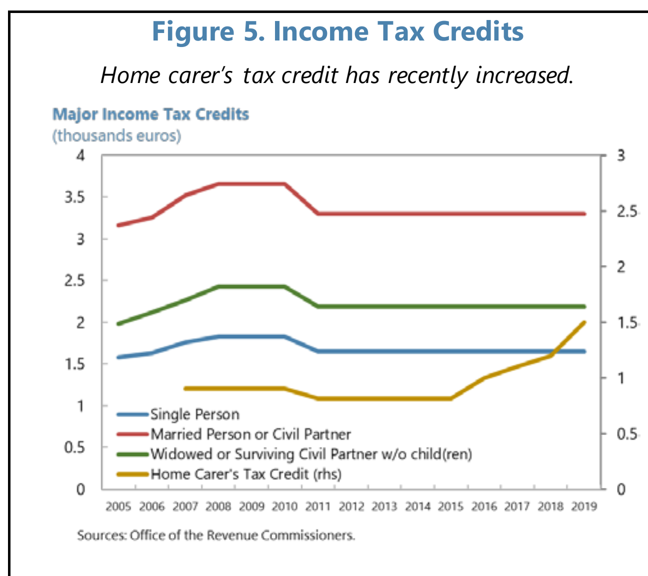
- **Increasing tax credits.** Tax credits have been increased rapidly during the boom of 2005–09 (Figure 5). The increase in tax reductions was between €250 and €560, depending on the social circumstances. Credits have been reduced across the board in 2011, to their level in 2006.

10. Post-2014, income taxes have been reduced again, fueling the recovery in domestic demand. This time by reducing the higher tax rate to 40 percent in 2014; increasing the thresholds for the higher tax rate; and increasing the Home Carer's tax credit (Figures 4 and 5).

Figure 5. Income Tax Credits

Home carer's tax credit has recently increased.



Sources: Office of the Revenue Commissioners.

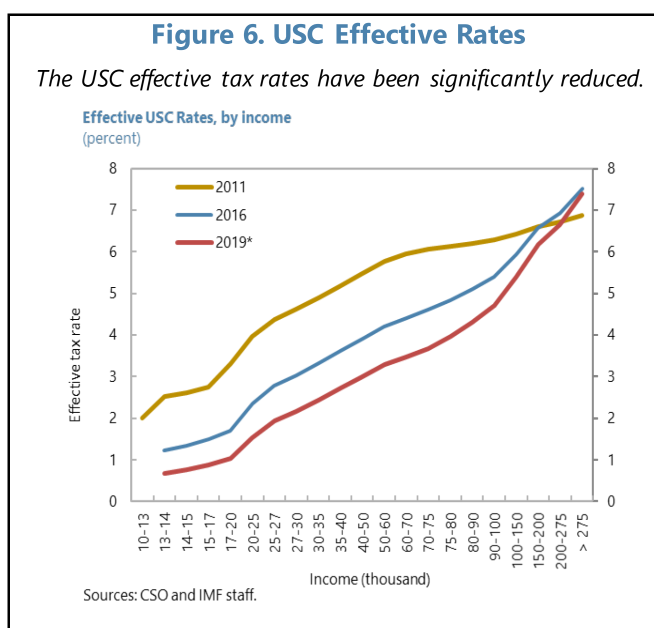
C. The Universal Social Charge

11. The USC was introduced as a crisis measure in 2011. Instead of reforming the Income Tax, the USC replaced the Health Levy and Income Levy. It was meant to broaden the tax base by individualizing the tax, lowering the entry point, and taxing all income with minimum exclusions and no tax credits.

12. The USC is an individualized tax payable on total income. If total income exceeds €13,000, the USC taxes the full income. Total income includes employment income, taxable employer benefits, self-employed income, rental income, share option gains, and dividend income, while payments from the Department of Employment Affairs and Social Protection and deposit interest subjected to the Deposit Interest Retention Tax are exempt. Capital allowances for plant and machinery and certain buildings are allowed as a deduction before USC is calculated. There is no relief from USC for employee pension contributions. As introduced in 2011, the USC was a very effective and efficient tax.[5]

Figure 6. USC Effective Rates

The USC effective tax rates have been significantly reduced.



Sources: CSO and IMF staff.

13. However, post-2014 changes to the USC bands and rates have reduced its initial benefits. A sequence of changes to the USC

[5] Although the initial USC schedule induced jumps in the average tax rate, raising equity concerns.

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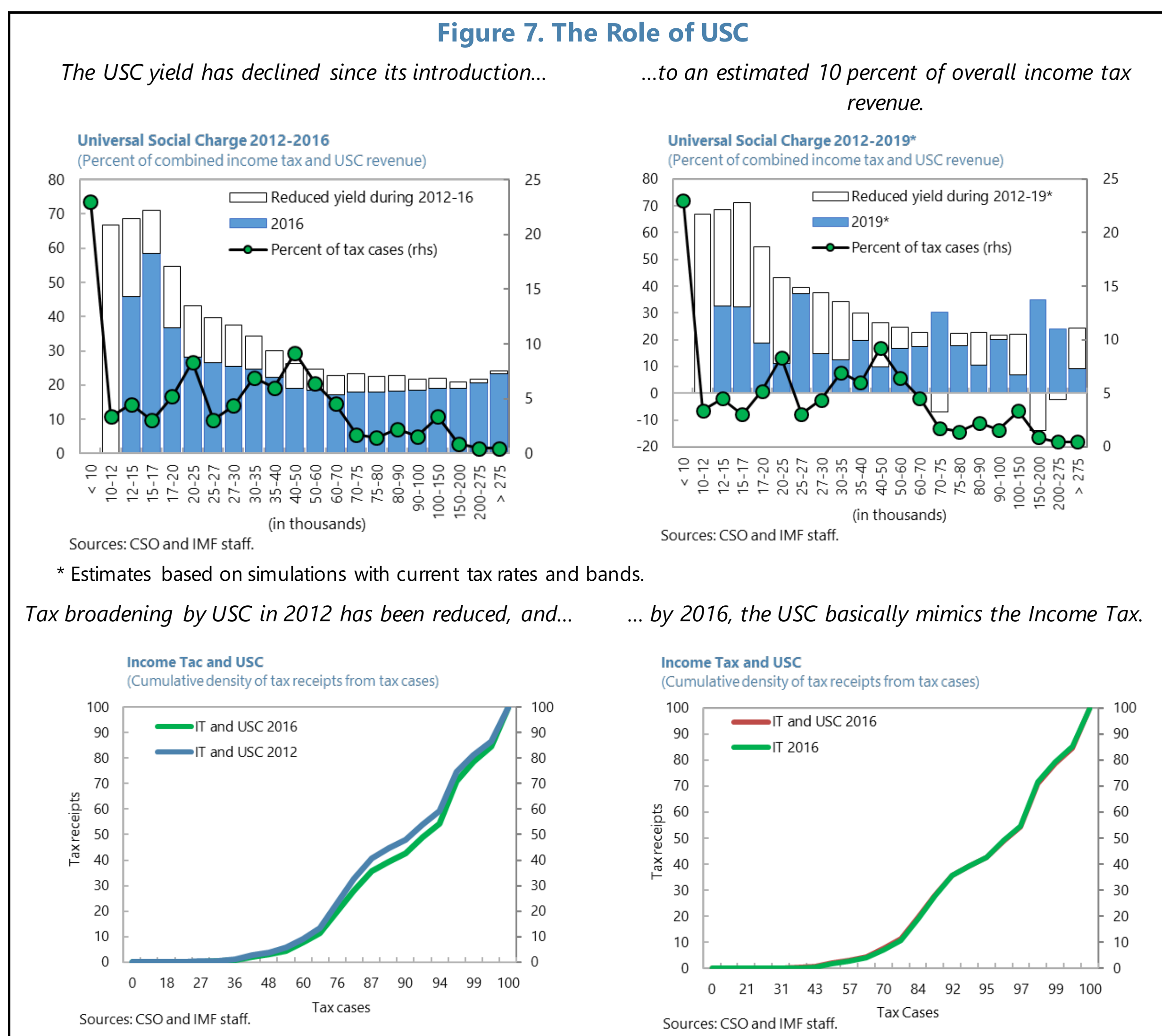
design, including increased entry-point and reduced rates and widening bands (see Table A2), have reduced the effective USC tax rate for low- and medium-income earners, while increasing it for the highest earners (Figure 6). At the same time, these changes have narrowed the tax base.

14. Consequently, the USC yield has declined significantly. While in 2012, the USC collected more than a third of the combined Income Tax and the USC, in 2016 it was only 20 percent and by 2019, this share is estimated to decline further to about 14 percent (Figure 7).

15. In addition, the USC no longer materially increases the tax base compared to the Income Tax. According to the cumulative density functions of tax paid by percentiles of tax cases in 2016, there seems to be effectively no difference between the USC and Income Tax in terms of spreading the tax burden (Figure 7).[6]



[6] The tax base for USC and IT differs in the legal definition, however, in the amount of actual tax collected, the difference is currently very minimal. The USC tax base had been reduced between 2011 and 2016, but has stayed unchanged since then.

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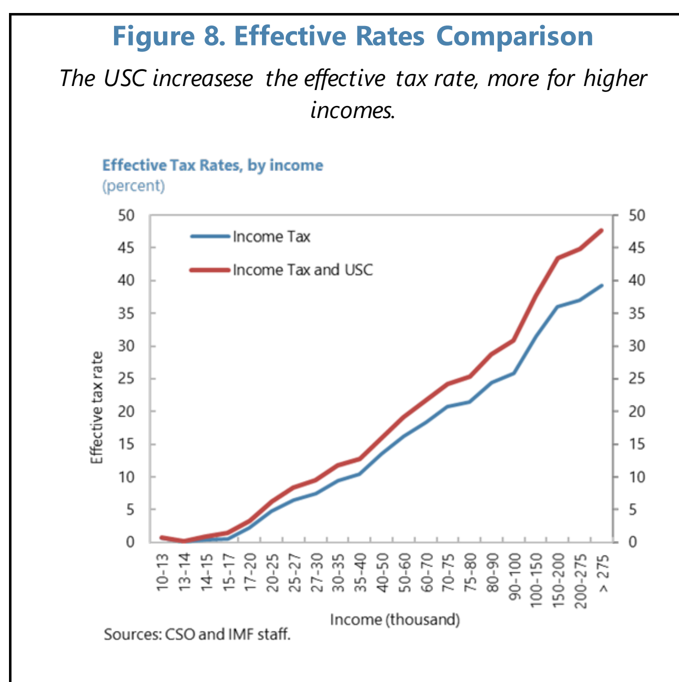
16. Given its current calibration, the USC could be usefully replaced by a reformed Income Tax. This could simplify the tax system, while preserving the overall personal income tax yield. A reformed Income Tax could possibly also broaden the tax base and reduce disincentives to work more for low income earners. If accompanied by means-tested cash transfers for low-income households, it would preserve the major benefits of the tax redistribution system that serves Ireland well.

D. Replacing the USC with a Re-calibrated Income Tax

17. The USC increases the effective tax rates and progressivity of personal income taxes. Effective tax rates for the combined yield from the USC and the Income Tax show a steeper increase with income compared to the Income Tax alone (Figure 8). This suggests that merging the USC with Income Tax would necessitate higher Income Tax rates to preserve yield and progressivity of the current system.

Figure 8. Effective Rates Comparison

The USC increasese the effective tax rate, more for higher incomes.



18. A re-calibration of the current Income Tax to absorb the USC is possible, nevertheless with some distributional changes. Within the current two-rate Income Tax system, a re-calibration would necessitate rates of 24.4 and 48 percent for the base rate and higher rate, respectively, to preserve the current yield from both the USC and the Income Tax.[7] However, these rates are practically equal to the combined current effective rates applied in the two tax schedules. Thus, the major benefit of such unification is the simplification of the personal income tax system. *Reducing the administrative burden* comes at a price of canceling tax individualization and distributional changes of actual tax payments in the higher income groups (Figure 9).[8]

[7] Assuming that the higher income tax rates are not circumvented by increased pension contributions when paid through the re-calibrated IT schedule.

[8] The distributional analysis doesn't take into account the interaction of the tax and welfare systems.

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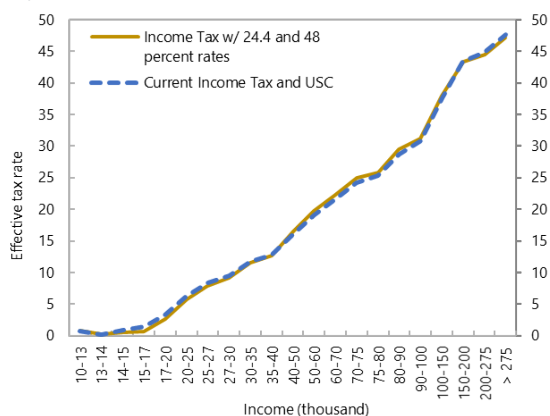
Figure 9. Re-calibrated Income Tax

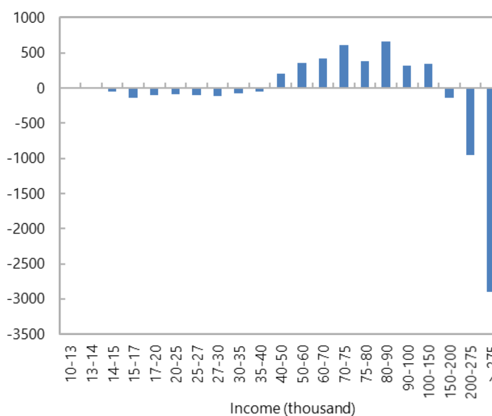
Higher rates for the Income Tax would imply distributional changes mainly in higher income grouops.

Effective Tax Rates, by income
(percent)



Sources: CSO and IMF staff.

Simulated Changes in Paid Tax, Compared to Current Situation
(for tax rates 24.4 and 48 percent; euros)



Sources: CSO and IMF staff.

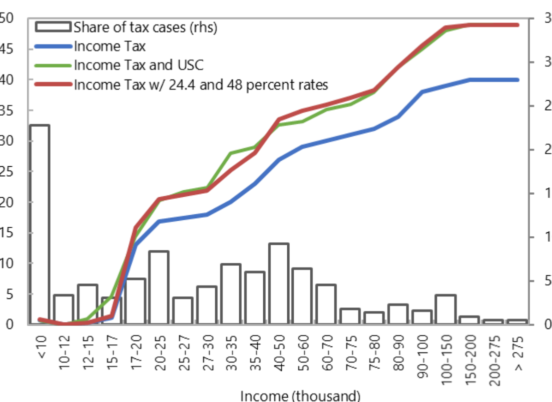
E. A More Substantial Reform Could Yield Additional Benefits

19. The Income Tax could be further amended to enhance incentives to work, while safeguarding the progressivity of the system. Thanks to the current level of tax credits, earnings up to €17,000 are practically free of income tax. At the same time, beyond that threshold income earners pay effectively 24.4 cents on every additional euro earned (Figure 10). Therefore, some tax payers may be disincentivized to work more by the sudden progressivity of the tax rate.

Figure 10. Marginal Effective Tax Rates

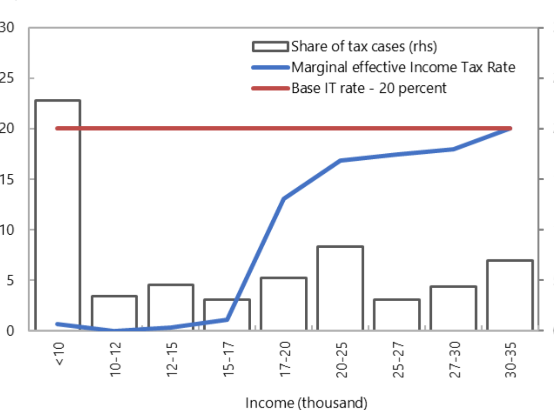
The marginal effective tax rate increases very steeply at the low income mode.

Marginal Effective Tax Rate, by income
(percent)



Sources: CSO and IMF staff.

Marginal Effective Tax Rate, up to €35 000
(percent)



Sources: CSO and IMF staff.

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20. A combination of the following changes could deliver a more work-incentive compatible and equitable personal income tax system:[9]

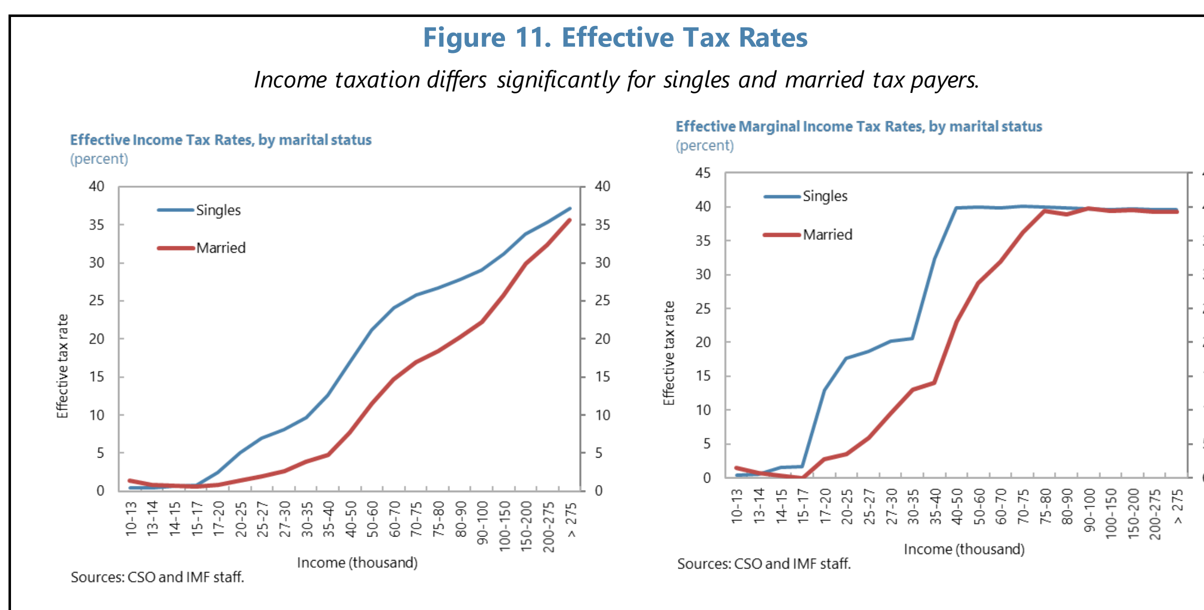
- Introducing more tax bands and rates (similarly to the USC) would allow for smoothing the progressiveness of income taxes at lower incomes, *hereby marginally improving the vertical equity* (making sure that tax payers that should pay more tax actually have the ability to do so).

- Recalibrating tax credits may also help smoothing progressiveness at the low income mode and broaden the tax base, thereby *minimizing the deadweight loss from income tax,*[10] *when incentives to work more are hampered by the high marginal effective tax rate*; and

- Individualizing the system (similarly to the USC) may improve *horizontal tax equity* and may incentivize female employment (Figure 11).

Figure 11. Effective Tax Rates

Income taxation differs significantly for singles and married tax payers.



21. At the same time, changes to personal income taxation ought to be neutral in terms of the overall progressiveness, redistribution, and current overall tax yield:

- **Progressivity.** Ireland has one of the most progressive personal income tax systems among OECD countries (Giustiniani, 2017), which is an important and effective component for addressing the high market inequality (IMF, 2018).

[9] Abstracting from the effects of the PRSI and the PRSI credit. A reformed IT schedule should also be considered with respect to the PRSI effects on the marginal effective tax rates.

[10] The steep marginal tax rate at a certain income level reduces incentives to work more for that income cohort, which leads to a reduced economic activity compared to a situation with more gradual marginal tax. This is referred to as the deadweight loss.

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- **Redistribution.** Ireland's tax-benefit system is effective in redistributing income and alleviating poverty (Giustiniani, 2017). Therefore, tax broadening and smoothing of the progressivity at low income quartiles could be accompanied by means-tested cash transfers to continue to protect the low-income households.

- **Tax yield.** The current level of combined Income Tax and USC yield relative to GNI* is close to the 10 year-average (Figure 3), which seems to be a useful benchmark for calibrating a sustainable share of personal income taxes in national income.

22. And finally, future changes to the personal income tax system should be strictly disconnected from CIT or other cyclical revenues. In this way, the personal income tax system could fulfill its business cycle stabilization role, maintaining a steady yield as a share of GNI*. Any future abundant CIT or other revenues during booms should be saved and eventually used during downturns to smooth the business cycle.

F. Conclusions

23. Ireland's personal income tax system has undergone significant changes in the last decade and half. These included lowering taxes during booms, especially for lower income earners and introducing the USC during the crisis. This procyclicality seems to be connected in part to the performance of CIT revenues. More recently, income taxes have been reduced again, making the current Income Tax-USC system less efficient and steeply progressive at low incomes with negative implications for incentives to work more for a large cohort of tax payers. Nevertheless, the overall high progressivity of personal income taxation by international standards, combined with the benefits system, has been found efficient in income redistribution and alleviating poverty (Giustiniani, 2017), and is worthy to preserve.

24. Reforming the Income Tax and canceling the USC appears to be potentially beneficial, especially to reduce the administrative burden and align work incentives. A reform should, however, preserve the overall income tax progressivity and tax yield, which could be achieved by a broader tax base, more tax bands and higher tax rates. Any undesired impact of spreading the tax burden more broadly could be mitigated by means-tested cash transfers for low income households. The reformed Income Tax should aim at providing a stable source of tax revenues throughout the business cycle and avoid procyclicality.

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Annex 1. Personal Income Tax Changes

Table A1: Selected years for Income Tax Thresholds for 20 Percent Tax Rate; balance taxed at 40 percent

	2005	2008	2010	2011	2014	2018	2019
Single, widowed or a surviving civil partner without qualifying children	€29,400	€35,400	€36,400	€32,800	€32,800	€34,550	€35,300
Single, widowed or a surviving civil partner qualifying, Single Person Child Carer Credit (2014)	€33,400	€39,400	€40,400	€36,800	€36,800	€38,550	€39,300
Married or in a civil partnership (one spouse or civil partner with income)	€38,400	€44,400	€45,400	€41,800	€41,800	€43,550	€44,300
Increase for married or in a civil partnership (both spouses or civil partners with income) max	€20,400	€26,400	€27,400	€23,800	€23,800	€25,550	€26,300
The higher tax rate (percent)	42	41	41	41	40	40	40

Source: Office of the Revenue Commissioners.

Table A2: Evolution of the Universal Social Charge

	2011-14	2015	2016	2017	2018	2019
First €10,036	2%					
First €12,012		1.50%	1%	0.50%	0.50%	0.50%
Next €5,564		3.50%				
Next €5,980	4%					
Next €6,656			3%			
Next €6,760				2.50%		
Next €7,360					2%	
Next €7,862						2%
Next €50,170						4.50%
Next €50,672					4.75%	
Next €51,272				5%		
Next €51,376			5.50%			
Next €52,468		7%				
Balance	7%	8%	8%	8%	8%	8%

Source: Office of the Revenue Commissioners.

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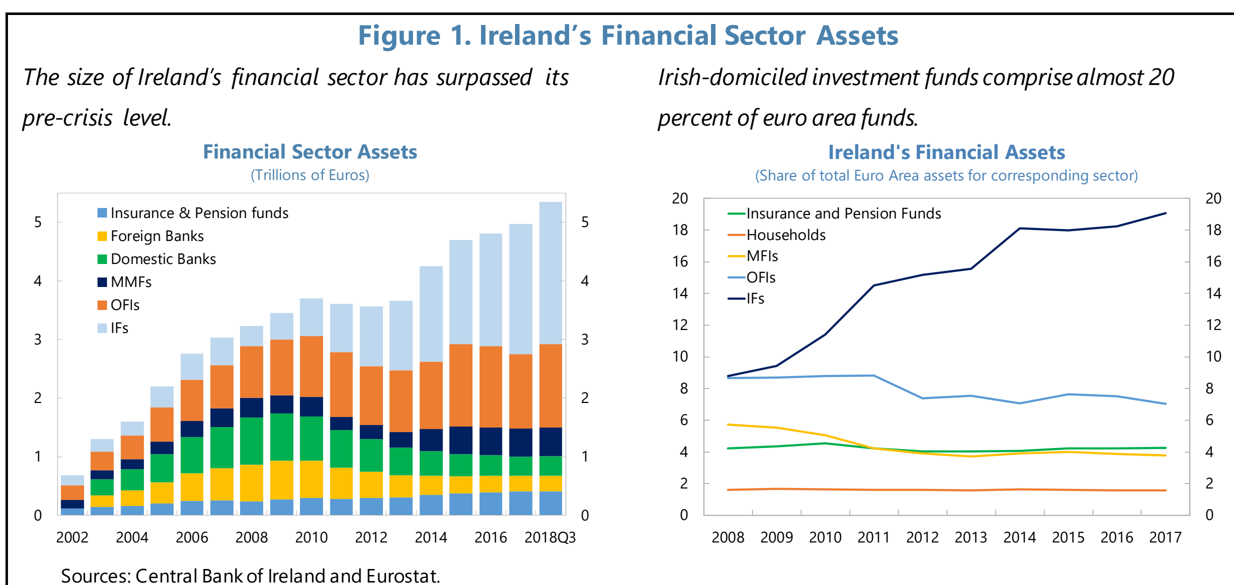
NON-BANK FINANCIAL SECTOR IN IRELAND: LINKAGES AND RISKS[1]

A. Introduction

1. **The non-bank financial sector in Ireland is large and growing fast.** Total assets of investment funds and other financial intermediaries in Ireland grew rapidly from €1.4 trillion at end-2009 to €3.9 trillion (12 times annual GDP) in 2018:Q3, largely driven by the fivefold increase in the investment funds assets to €2.4 trillion. Money market funds and other financial intermediaries grew by 58 and 43 percent, respectively. During the same period domestic and foreign (IFSC) banks' balance sheets have shrunk by 60 percent. As a result, the overall size of Irish financial sector has surpassed its pre-crisis level by more than half (Figure 1).

Figure 1. Ireland's Financial Sector Assets



Sources: Central Bank of Ireland and Eurostat.

2. **Ireland is an important domicile for the global investment funds and special purpose vehicles sector**. Growing non-bank financial intermediation is an EU-wide and global phenomenon. A number of factors make Ireland an attractive destination for the funds and vehicles industry, including full market access to the EU, English language, common law system, and, not the least important, a business friendly regulatory and tax regime.[2] These factors have contributed to the

[1] Prepared by Anna Shabunina. This chapter has benefitted from comments by the discussant Kitty Moloney and other participants at the Central Bank of Ireland's Workshop on May 7, 2019, in Dublin.

[2] Irish regulated funds are exempt from Irish tax on income and capital gains derived from their investments and are not subject to any Irish tax on their net asset value. There are additionally no net asset, transfer or capital taxes on the issue, transfer or redemption of units owned by non-Irish resident investors. The provision of management, administration and custody services to an Irish regulated fund is exempt from Irish VAT. Other services, such as legal and accounting services, can result in an Irish VAT liability, but this may be offset, depending on the fund's VAT recovery position. Exit tax is paid by Irish resident investors on exiting the fund. (Source: Irish Funds)

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exceptional growth of the Irish funds sector, that has doubled its share in the euro area to almost 20 percent. In contrast, the share of Irish households' financial assets remained flat at 1.6 percent of euro area household assets.

3. Risks are rising in the non-bank financial sector in Europe. The ECB's Financial Stability Review (2018) emphasizes growing risks and interconnectedness between non-bank financial sector entities and banks, including through direct balance sheet exposures. The review also pointed out that increased risk-taking, coupled with liquidity and maturity transformation in the investment fund sector, continues to pose a risk to euro area financial stability. In particular, it raised concerns regarding the increased lower-rated bond holdings by non-banks and close ownership ties between asset management companies and euro area banks.

4. The CBI and the Central Statistics Office (CSO) are developing deeper insights into the funds and vehicles sector and have expanded data collection.[3] The CBI is implementing liquidity risk assessments and investor-base analysis, including the development of internal stress testing of funds, a heat map of risks, and international comparisons of liquidity. The CBI has participated in IOSCO's Investment Management Committee in developing a consistent measure of leverage to facilitate the monitoring of financial stability risks. The authorities are also regularly engaging with the ESRB, ECB, ESMA, FSB and IOSCO on regulatory, analytical and data-related issues.

5. The large size of the non-bank financial sector in Ireland and its growing interconnectedness call for a better understanding of potential risks. Expanding market-based alternatives to bank financing can be beneficial both for economic growth and financial stability as the equity-based component of the funds and vehicles sector means less instability than bank-based debt finance. However, reliance on market finance also poses risks. Triggers such as large unexpected redemption requests can cause fire sales and runs. These can, in turn, amplify the size of risk premia and render markets dysfunctional, reducing the availability of credit and launching a macro-financial feedback loop, possibly feeding into financial crisis. Direct balance sheet exposures to other sectors, especially banks, can exacerbate the spillovers.

6. This chapter is structured as follows. First, it provides a description of the Irish funds and vehicles sector and its composition. Second, it analyses the direct financial and economic linkages between investment funds and vehicles and the Irish domestic economy. Third, it looks at the financial interlinkages with the euro area, the U.K., and the rest of the world. The forth section presents an assessment of risks and vulnerabilities. The chapter concludes with some policy recommendations.

[3] E.g., "New Data Collection on Special Purpose Vehicles in Ireland: Initial Findings and Measuring Shadow Banking"; "Shining a light on special purpose entities in Ireland"; and "Liquidity Analysis of Bond Funds and MMFs".

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B. Description of the Funds and Vehicles Sector

7. The analysis in this chapter covers Irish-domiciled funds and other financial intermediaries. The non-bank financial sector in Ireland consists of several subsectors: money market funds (MMFs), non-MMF investment funds (IFs), pension funds, insurance companies, and other financial intermediaries (OFIs). The analysis in this chapter focuses on the Irish-domiciled funds (MMFs and IFs) and OFIs, in some instances looking only at its subcomponent, namely securitization (FVCs) and non-securitization special purpose entities (SPE), for which additional information is available.[4] Pension funds and insurance companies remain outside the scope of this chapter.

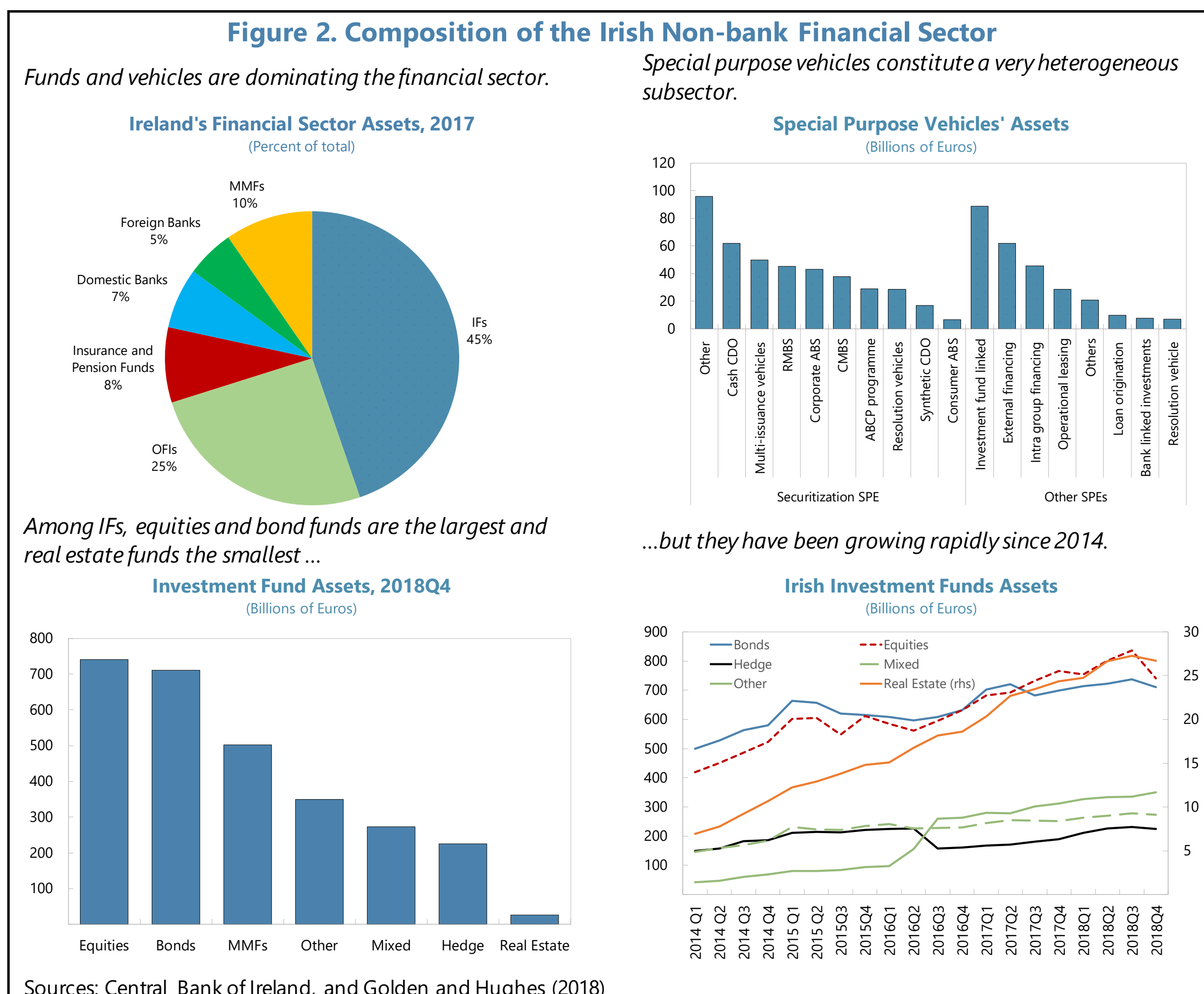

Figure 2. Composition of the Irish Non-bank Financial Sector

Sources: Central Bank of Ireland, and Golden and Hughes (2018)

[4] Golden and Hughes (2018) define an SPE as a legal entity, with little or no physical presence and narrow, specific, and/or ring-fenced objectives, such as the segregation of risks, assets and/or liabilities, or as a cash conduit. An SPE is often, though not exclusively, a satellite company of another financial entity and forms an ancillary part of the associated entity's business by warehousing assets or risks.

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- Assets under management of investment funds constitute the largest part of the financial sector: three quarters of which are composed of Undertakings for Collective Investment in Transferrable Securities (UCITS) funds and one quarter of Alternative Investment Funds (AIFs). Money market funds constitute 10 percent of the total financial sector assets.

- OFIs include companies engaged in financial leasing and other lending, securitization vehicles, derivative and security dealers, treasury companies and a range of other companies engaged in financial intermediation. The Central Bank of Ireland (CBI) is collecting additional data on a subgroup of OFIs – FVCs and non-securitization SPEs - that together account for 50 percent of OFI assets.

8. There are more than 7,200 investment funds in Ireland providing an extensive range of investment options. Equity funds, that invest primarily in listed and unlisted equity and shares, constitute the largest segment with €741 billion in total assets in 2018:Q4; bond funds are the second largest group with €711 billion in assets under management; and MMFs assets total €502 billion. Real estate funds with €27 billion in assets are the smallest but are growing rapidly and have strong connections with the domestic economy (Figure 2).

9. Special purpose vehicles are used to service a wide range of financial intermediation needs. The majority of SPEs, 60 percent by assets, are entities created to carry out securitization transactions which are insulated from the risk of bankruptcy of the originator, or to issue securities and/or legally own underlying assets. These include residential and commercial mortgage-backed securities, corporate and consumer asset-backed securities, and commercial collateralized debt and loan obligations, among others. Non-securitization SPEs have a much wider range of activities, including loan origination, operational leasing, and external and intragroup financing. Most non-securitization SPEs issue debt securities or loan instruments (Golden and Hughes, 2018).

C. Linkages with the Domestic Economy

10. The direct balance sheet exposures of the investment funds and OFIs are predominantly to non-residents, but domestic links are non-trivial and growing. Table 1 shows gross bilateral positions of the Irish economic sectors vis-à-vis each other. Each sector assets are shown in rows and liabilities in columns, e.g., a crossing of domestic banks row with the households column mainly contains mortgages. Due to the lack of counterpart data for some instruments and subsectors, some elements of Table 1 are based on CBI estimates. The flow-of-funds data show that the exposures of MMFs, IFs and OFIs are mostly to the rest of the World, both on their liabilities and asset sides. Domestic exposures are mostly within IFs and OFIs, with cross-holdings of IFs amounting to 38 percent of GDP and of OFIs to 33 percent of GDP. There are also significant linkages between IFs and OFIs, with investment funds holding claims on Irish OFIs of 24 percent of GDP and vice versa of 12 percent of GDP.

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Table 1. Network Matrix (Gross Bilateral Positions)

(Percent of GDP, 2018 Q3)

Unit: Per cent of GDP		Liabilities												
		CBI	DMFIs	FMFIs	MMFs	NMIFs	OFIs	ICs	PFs	GOV	NFCs	HHs	ROW	Total
Assets	CBI	-	1	0	-	-	1	-	-	16	-	-	14	32
	DMFIs	3	17	3	1	1	13	0	0	3	12	29	22	103
	FMFIs	4	-	1	-	0	1	0	0	-	1	1	59	68
	MMFs	-	-	0	0	0	1	-	-	-	0	-	154	155
	NMIFs	-	3	2	7	38	24	0	-	0	4	0	690	768
	OFIs	-	9	1	-	12	33	2	-	3	25	13	322	418
	ICs	-	1	0	0	4	4	1	0	1	2	1	78	91
	PFs	-	1	0	0	1	3	-	-	0	3	-	33	40
	GOV	11	1	1	0	0	4	0	-	3	5	1	7	34
	NFCs	1	15	1	1	3	15	1	-	2	84	1	399	523
	HHs	-	31	4	0.1	0.3	0.4	18	40	11	6	-	6	117
	ROW	6	27	43	146	704	314	73	-	49	547	1	1	1,911
	Total	26	106	57	155	764	411	95	40	87	688	47	1,784	4,262

Note: CBI – Central Bank of Ireland; DMFIs – Domestic Monetary Financial Institutions; FMFIs – Foreign Monetary Financial Institutions; MMFs – Money Market Funds; NMIF – Non-Money market Investment Funds; OFIs – Other Financial Institutions; IC – Insurance Companies; PFs – Pension Funds; GOV – Government; NFCs – Non-financial Corporates; HHs – Households; ROW – Rest of the World.
Source: Central Bank of Ireland.

11. Domestic banks, insurance companies and pension funds have significant asset-side exposures to funds and vehicles. Domestic banks have 12 percent of their assets invested in OFIs.[5] Insurance companies and pension funds invest 9 and 8 percent of their assets, respectively, in OFIs and IFs. Thus, a valuation shock in the funds and vehicles sector can have sizable repercussions for domestic banks, insurance and pension funds. Non-financial corporations have 19 percent of GDP or 3.6 percent of their assets invested in Irish MMFs, IFs and OFIs, which are largely concentrated in OFIs and might reflect intragroup financial structures and operations of multinationals.

12. Funds and OFIs provide funding for domestic banks and households. Irish domestic banks receive 11 percent of their funding from the funds and vehicles sector. Hence, a funding shock on IFs and OFIs can have an impact on domestic banks. More than a quarter of household financial liabilities are to OFIs, including the securitization SPEs created by banks. This important exposure reflects securitized mortgages and loan sales from banks. Retained securitization accounts for 70 percent of the total.[6]

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[5] This largely reflects the creation of securitization SPEs by banks.

[6] Retained securitization is the process by which a bank establishes an SPE to purchase a portfolio of its assets, in this case residential mortgages. The purchase is funded through the issuance of residential mortgage-backed securities (RMBS), which are listed on the stock exchange. Unlike standard securitization the RMBS are not purchased by third parties, but by the same originating bank. This process allows the creation of a consolidated asset from a portfolio of illiquid loans. The primary goal of retained securitization is to access ECB liquidity operations by pledging the above RMBS as collateral, provided the asset meets the necessary requirements as an eligible asset.

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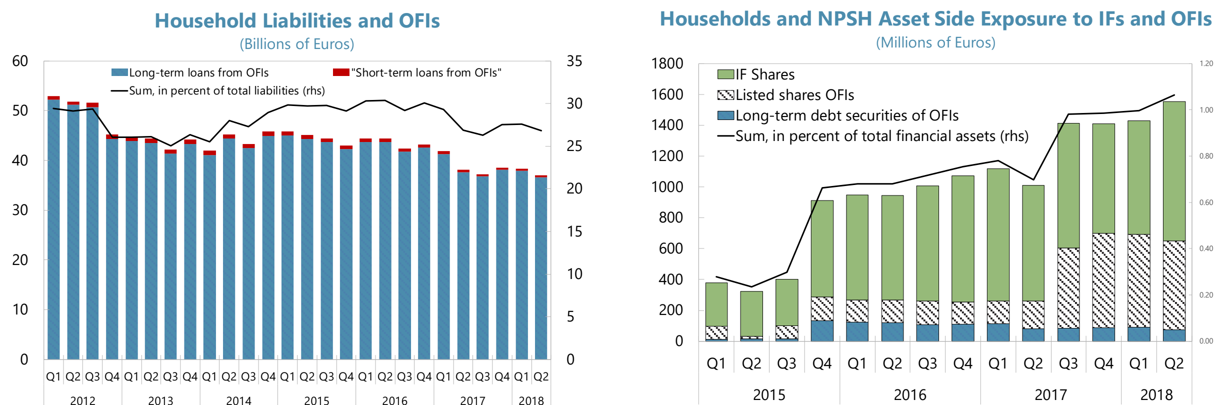
Figure 3. Financial Linkages with Irish Households

More than ¼ of household liabilities are to OFIs.

Households invest 1% of their assets in the sector.



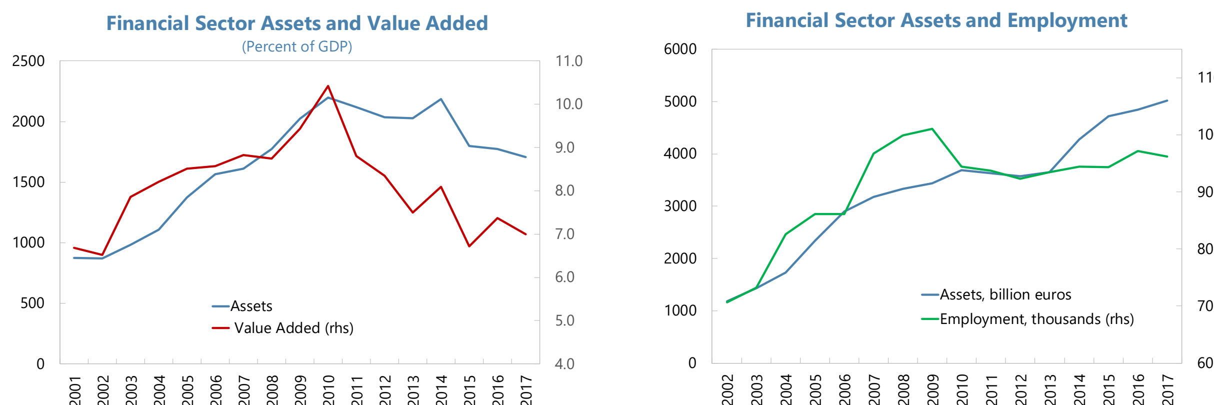
Source: Central Bank of Ireland.

13. Value-added and employment linkages with the domestic economy are difficult to determine. Unavailability of disaggregated time series on employment and value-added for the funds and vehicles sector limits the analysis. As a proxy, we look at the developments in the total financial sector, noting that its growth was exclusively driven by the funds and vehicles sector. While the rapid growth of funds' assets was accompanied by an increase in the absolute value-added of the financial sector, its share in GDP has declined, partly due to the exceptional GDP growth from 2015. Total employment in financial sector has declined by 5 percent since 2009.

Figure 4. Value Added of the Financial Sector in Ireland

Value added of financial sector has increased in absolute terms, however, its share in GDP has declined.

Total employment in financial sector is lower than in 2009.



Source: CSO.

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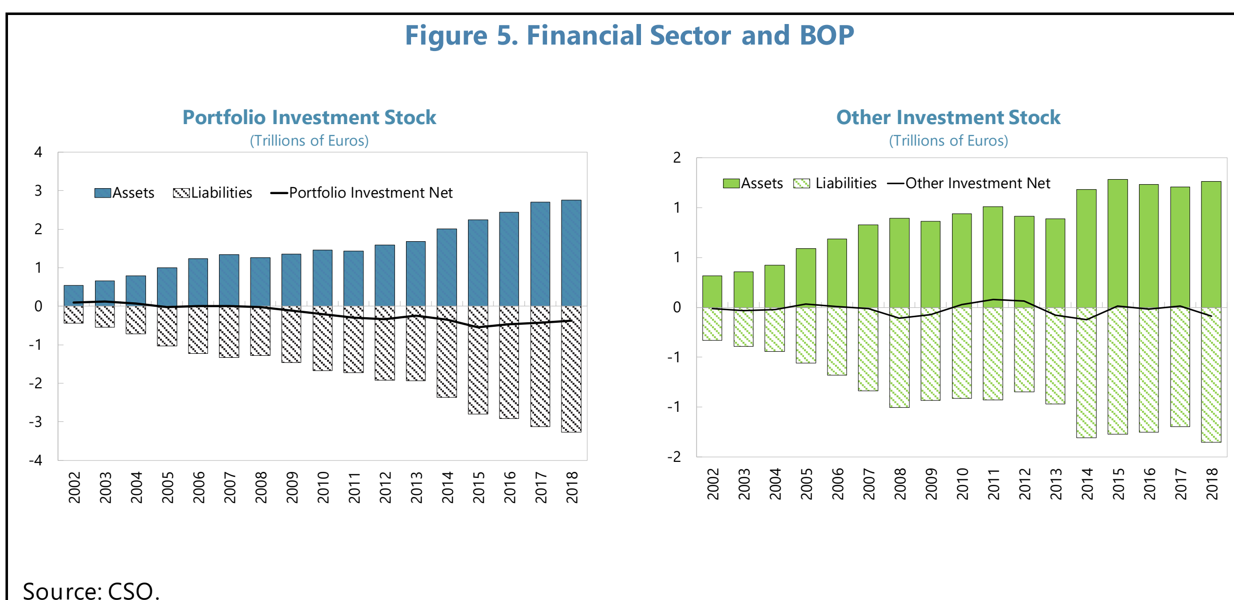
14. Funds and vehicles activity has a large impact on Ireland's balance of payments and the international investment gross positions. The strong growth of the IF and OFI sector is reflected in ballooning international investment asset and liabilities positions. The size and complexity of the sector poses challenges for the compilation of statistical aggregates. Reclassifications and revisions within the OFI sector can cause large statistical revisions in the IIP, and the financial and current accounts of the balance of payments. Significant progress has been made in data collection within the sector, most notably the extension of granular reporting, already applying to MMFs, IFs and FVCs, to non-securitization SPEs in 2015. Nevertheless, a substantial portion of the OFI sector is collected on a more aggregated basis.

Figure 5. Financial Sector and BOP



Source: CSO.

D. Global Linkages

15. Irish IFs' and MMFs' assets and liabilities are well-diversified geographically, with the largest single country exposure to the U.S. Irish funds have assets (above €1 billion) in more than 60 countries and attract funding from more than 90 countries. The U.S. is the main destination of portfolio investment from Ireland, accounting for 30 percent of total assets. Approximately 40 percent of these claims is invested in non-financial corporations, 16 percent in banks and 10 percent in government debt, with the rest invested in the U.S. funds and vehicles sector. The United States is also the largest investor in the Irish funds and vehicles sector, owning 26 percent of investment fund shares (Figure 6).

16. The U.K. exposures are also large. The U.K. is the second largest investment destination, accounting for 20 percent of Irish funds and vehicles assets. The composition of the U.K. investment is different - 36 percent is invested in U.K. government bonds and a similar amount in U.K. banks, with non-financial corporations accounting for less than 10 percent of total investment. On the liabilities side, the data compiled by the CBI on a first counterparty basis show a very large exposure to the U.K. - at 40 percent of total. However, these are largely claims of U.K. investment funds and

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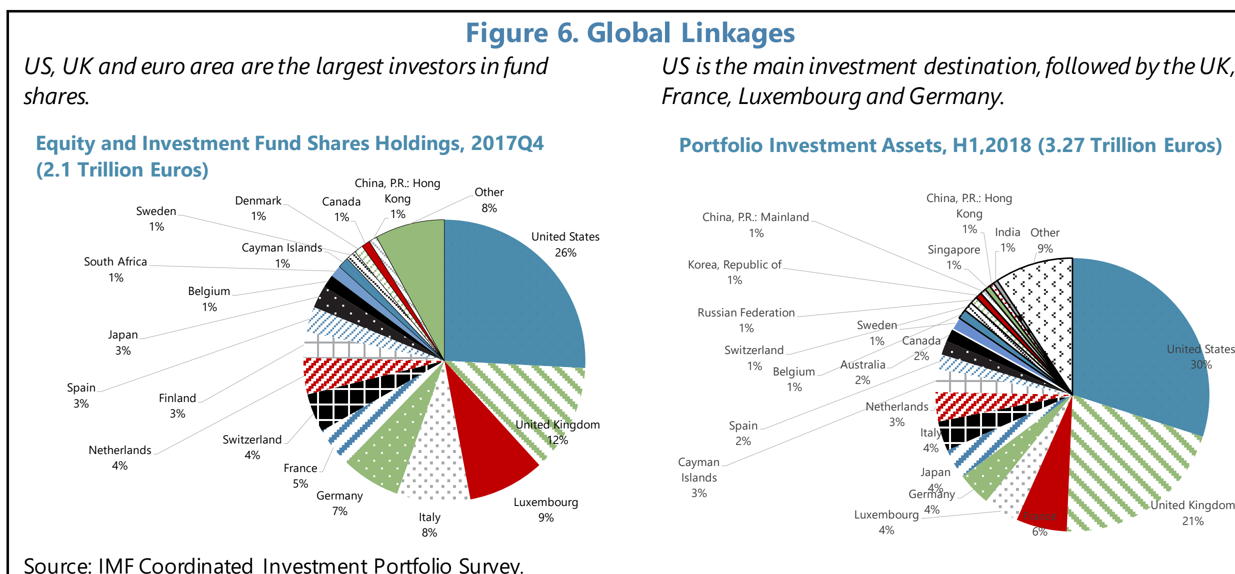
their ultimate investors are from different countries. The IMF Coordinated Portfolio Investment Survey data derived from the information provided by creditor countries gives an assessment of ultimate investor origins. It shows that the funding exposures to the U.K. are smaller – at around 12 percent for fund shares and 11 percent for debt securities.

17. Irish funds provide important funding for the Euro Area by investing in government and bank debt. Irish investment funds and vehicles hold more than €120 billion of euro area bank debt. Total IFs asset exposure to the euro area has increased fivefold from €50 billion in 2009 to more than €250 billion.

Figure 6. Global Linkages

US, UK and euro area are the largest investors in fund shares.

US is the main investment destination, followed by the UK, France, Luxembourg and Germany.



Source: IMF Coordinated Investment Portfolio Survey.

E. Assessing the Resilience of the Funds and Vehicles Sector

18. This section estimates the aggregate financial stress level and discusses three sources of financial vulnerability for the sector: (i) liquidity mismatch, i.e. issuing short-term liabilities or redeemable equity while investing in less liquid assets; (ii) maturity mismatch or risk of investing in longer-term assets dependent on shorter-term funding; and (iii) leverage risk coming from investment based on credit.

19. The overall financial stress level in the investment funds sector remains low. We follow the methodology described in Cortes et al (2014) to estimate the aggregate probability of distress in the investment fund industry. This approach requires an estimation of the distribution of asset returns and a threshold related to periods of significant outflows. Once such a threshold is defined, it is possible to define the probability of distress as the probability that returns would be lower than the level indicated by the threshold. Returns are estimated using the data on value of the funds, adjusted by redemptions and subscriptions to ensure that returns reflect adequately the impact of price changes. Our findings show that the financial stress level in the Irish funds industry is significantly lower than it was during the European sovereign debt crisis or the normalization of U.S.

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monetary policy in 2016. There was, however, a moderate increase in Q4-2018, largely reflecting the pullback in global equity markets.

20. Liquidity transformation has increased somewhat across all fund types, and especially in bond, real estate and mixed funds. Bond funds account for 30 percent of total funds' assets. Liquidity mismatch for bond funds has increased both by narrow and broad definition, e.g., three quarters of bond funds have a share of narrowly defined liquid assets (i.e. deposits, AAA and AA rated government bonds) at less than 10 percent of assets under management (the measure has declined from 15 percent in 2014). While not increasing, equity, mixed and money market funds have a relatively high level of liquidity transformation.

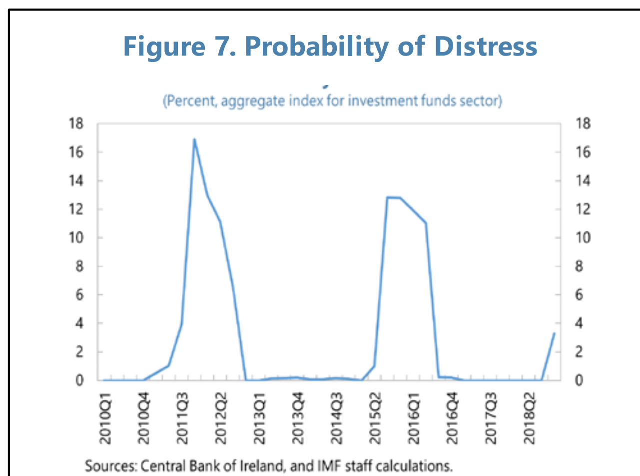

Figure 8. Liquidity and Maturity Mismatch in Irish Funds

Liquidity Transformation (Narrow Definition)
(Percent)

March 2014 · December 2018 — Bond, Equity, Hedge, MMF, Mixed, Other, Real Estate

Note: Liquidity transformation is (AUM - liquid assets [narrow] + short term liabilities [≤ 30 days] + redeemable equity [≤ 30 days]) / AUM.

Maturity Transformation
(Percent)

March 2014 · December 2018 — Bond, Equity, Hedge, MMF, Mixed, Other, Real Estate

Note: (short term liabilities [≤ 12 months] + redeemable equity [≤ 12 months]) / short term assets [≤ 12 months].

Liquid Transformation (Broad Definition)

March 2014 · December 2018 — Bond, Equity, Hedge, MMF, Mixed, Other, Real Estate

Note: (AUM - liquid assets [broad] + short term liabilities [≤ 30 days] + redeemable equity [≤ 30 days]) / AUM.

Maturity Transformation (broad definition)

Mar-14 · Dec-18 — Bond, Equity, Hedge, MMF, Mixed, Other, Real Estate

(long term assets - long term liabilities - nonredeemable equity) / AUM

Source: Central Bank of Ireland.

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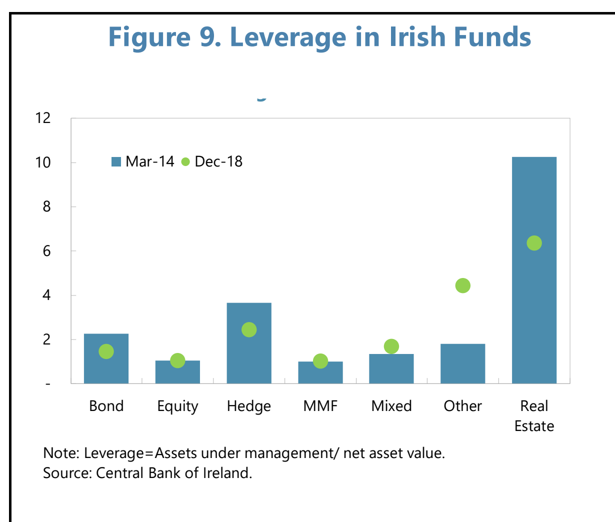
Bond funds and real estate funds have increased their maturity transformation. While equity funds and MMFs do not engage in maturity transformation, bond funds have significantly increased the share of long-term asset holdings, e.g., only 11 percent of their short-term liabilities are covered by short-term assets. For real estate funds this is higher at 30 percent, but it has decreased rapidly in recent years (i.e. maturity transformation has increased).

21. **Leverage of the Irish funds is low with the notable exception of the real estate funds**. Leverage is important to financial supervisors as it can amplify market shocks leading to fire sales, and even threaten fund solvency. Overall leverage ratios have come down in the last four years. Real estate funds, however, have high leverage despite the decline. Real estate funds constitute a small share of funds sector, but are growing fast, and have strong links to the domestic economy.

Figure 9. Leverage in Irish Funds



Note: Leverage=Assets under management/ net asset value.
Source: Central Bank of Ireland.

F. Conclusion

22. **The large size of the Irish non-bank financial sector, its global interconnectedness, growing domestic linkages and emerging vulnerabilities call for additional policy actions.** Going forward, the authorities should: (i) continue to enhance macroprudential-based surveillance of the sector, including by closely monitoring liquidity and maturity mismatches, asset quality, and excessive leverage; (ii) pursue efforts to build internal risk analysis capacities, develop system-wide methodologies for liquidity stress-testing, while coordinating at the EU and international levels; (iii) provide guidance to the industry on liquidity stress-testing and the use of liquidity management tools; and (iv) continue to contribute to the development of standardized cross border data sharing arrangements pertaining to fund management activities/entities (e.g. improving understanding of characteristics and concentration of the investor base), through relevant international fora and define clear deadlines for this work.

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