Institution: University of Glasgow (UofG)		
Unit of Assessment: UoA 17 Business and Management Studies		
Title of case study: Influencing Capital Income Taxation in the United States		
Period when the underpinning research was undertaken: 2009–2015		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s): (1) Céline Azémar	**Role(s) (e.g. job title):** (1) Professor	**Period(s) employed by submitting HEI:** (1) 2007–present
Period when the claimed impact occurred: 2017–2020		
Is this case study continued from a case study submitted in 2014? No		

1. Summary of the impact

Research by Céline Azémar (University of Glasgow) and Glenn Hubbard (Columbia University) challenged the US Congressional Budget Office orthodoxy that most of the burden of corporate tax is borne by those with capital. They provided new empirical evidence, in line with mainstream economic theory, that capital escapes part of that burden by shifting it to labour via lower wages. On this basis, a corporate tax cut would benefit households by increasing wages. This research influenced the adoption by the US Federal Government of a pro-growth tax plan ('Tax Cuts and Jobs Act 2017') and the decision to decrease the US corporate tax rate from 35% (which is much higher than in most OECD countries) to 21%.

2. Underpinning research

Azémar's research has explored multinationals' behavioural responses **[3.2]**, transfer pricing decisions **[3.3]** and Foreign Direct Investment **[3.4][3.5]**. The policy interest derived from US corporate taxation being at a much higher rate than the OECD average, resulting in US multinationals declining to repatriate overseas profits due to the tax thereby incurred. The collaboration with Glenn Hubbard (Columbia) produced the 2015 article in the *Canadian Journal of Economics* **[3.1]** which was highly influential in US policy debates leading up to the Tax and Job Cuts Act 2017.

Nominal tax incidence (who pays the tax) can be quite different from effective tax incidence (who bears the economic burden). The economic burden of a tax on capital income does not therefore fall mechanically upon the shareholders who have statutory liability for paying the tax. For instance, a higher tax burden can be shifted to consumers through higher prices or to workers through lower wages. Knowing who actually bears the burden of capital income tax is crucial for understanding both the progressivity of the overall tax system and inefficiencies caused by distortions in the allocation of capital.

While the early theoretical literature showed that for a closed economy, corporate income tax is fully borne by capital (Harberger, *Journal of Political Economy*, 1962), more recent analyses have consistently concluded that in an open economy (where capital can fly to other countries and consumers can buy foreign products), domestic labour bears a sizeable share of a corporate income tax increase (Harberger, American Council for Capital Formation, 2006; Randolph, Congressional Budget Office, 2007).

There have, however, been few empirical studies investigating the incidence of such taxes on wages, and the most influential ones do not include the United States in their analysis (Desai, Foley and Hines, International Tax Policy Forum and Urban-Brookings Tax Policy Center Conference, 2007; Arulampalam, Devereux and Maffini, *European Economic Review*, 2012). The research by Céline Azémar and Glenn Hubbard **[3.1]** filled that policy-relevant empirical gap by examining the incidence of corporate income taxes on wages. The dependent variable was the average hourly direct pay per worker in the manufacturing sector as computed by the Bureau of Labor Statistics for 13 OECD countries, including the United States.

That research for the first time allowed the magnitude of the shift to diverge by country characteristics. This analysis of a conditional effect of corporate tax incidence was guided by lessons from the two existing theoretical frameworks, namely 'wages based on labour productivity' and 'wages set through a bargaining process'. In so doing, it explored the extent to which the degree of shifting of capital taxation on to labour can be explained by the degree of

mobility of capital, a country's relative influence over the world price of output, and trade unions' strength.

Key findings
Consistent with general equilibrium models based on an open economy with perfect competition, and in line with the empirical literature on corporate income tax incidence, Azémar and Hubbard's research **[3.1]** finds that, on average in OECD countries, the owners of capital escape a substantial share of the additional tax burden of an increase in corporate taxes by shifting that burden to labour in the form of lower wages. Their baseline equation indicates that, on average for 13 OECD countries, increasing the corporate tax rate by one percentage point reduces wages by 0.1%.

3. References to the research

3.1. Azémar, C. and Hubbard, R. G. (2015), 'Country characteristics and the incidence of capital income taxation on wages: An empirical assessment', *Canadian Journal of Economics/Revue canadienne d'économique*, 48(5), pp.1762–1802. (doi:10.1111/caje.12179) (eprints id: http://eprints.gla.ac.uk/123561/)

3.2. Azémar, C. (2010), 'International corporate taxation and U.S. multinationals' behaviour: an integrated approach', *Canadian Journal of Economics/Revue canadienne d'économique*, 43(1), pp.232–253. (doi: 10.1111/j.1540-5982.2009.01570.x) (eprints id: http://eprints.gla.ac.uk/40626/)

3.3. Azémar, C. and Corcos, G. (2009), 'Multinational firms' heterogeneity in tax responsiveness: the role of transfer pricing', *World Economy*, 32(9), pp.1291–1318. (doi:10.1111/j.1467-9701.2009.01210.x) [Available on request from HEI]

3.4. Azémar, C. and Desbordes, R. (2013), 'External financial dependence and FDI responsiveness to corporate tax rates', *Applied Economics Letters*, 20(16), pp. 1472–1476. (doi: 10.1080/13504851.2013.826859) [Available on request from HEI]

3.5. Azémar, C. and Desbordes, R. (2010), 'Short-run strategies for attracting foreign direct investment', *World Economy*, 33(7), pp.928–957. (doi: 10.1111/j.1467-9701.2010.01226.x) [Available on request from HEI]

Quality of the research: Outputs **[3.1]**, **[3.2]**, **[3.3]**, **[3.4]** and **[3.5]** are published in double-blind peer-reviewed international economics journals.

4. Details of the impact

4.1. Pathways to Impact
The origins of the impact-generating publication **[3.1]** lay in Azémar's longstanding interest in both corporate tax incidence and the responses of multinational corporations to country tax regimes. Azémar, then a UofG lecturer, took up a visiting researcher position at Columbia University in 2011, where she met Glenn Hubbard, then Dean of its Graduate Business School. They shared a research interest in the incidence of corporate taxes, and Azémar proposed a collaborative study to produce new empirical evidence on the shifting to labour of corporate taxes in a range of countries, including the United States. This would potentially impact on US taxation policy. Hubbard had extensive experience in the US Federal Government as Deputy Assistant Secretary in the Department of the Treasury (1991–1993) and then Chairman of the Council of Economic Advisers (2001–2003). His prominence in policy circles provided realistic pathways to impact on US fiscal decisions and their four-year collaboration resulted in the 2015 article **[3.1]**.

4.2. Shifting the corporate tax debate
Until 2008, the US Treasury Department's Office of Tax Analysis (OTA) allocated the full incidence of corporate tax to capital (Cronin, Lin, Power and Cooper, 2012). This was guided by the early theoretical work on closed economies showing that corporate income tax is not shifted to labour but is fully borne by capital. Despite later work on open economies that has concluded that domestic labour bears a sizeable share of a corporate income tax increase, the

Congressional Budget Office (CBO), guided by the work of Jane Gravelle (Senior Specialist for Economic Policy in the Congressional Research Service), has continued to assign most of the incidence to capital (Gravelle, 'Corporate Tax Reform: Issues for Congress', Congressional Research Service, 2017).

More recently, the US Government began to cite the Azémar and Hubbard findings to justify a review of its assignment, and shift the incidence toward labour. For example, in August 2017, Steven Mnuchin, the then US Secretary of the Treasury, cited their research in arguing that the corporate tax rate is paid by workers. An article by Richard Rubin, which appeared in The Wall Street Journal on 8 August 2017, stated: *'The Treasury Department under Mr Mnuchin pointed to a 2015 study by Céline Azémar and Glenn Hubbard that estimated that a $1 increase in corporate taxes leads to a 60 cent decline in wages, suggesting a tight link between the two, with labor bearing about 60% of the corporate tax burden'* **[5A]** and concluded that a decrease of the U.S. corporate tax rate would benefit American households. He declared that such a reform is '*about putting money back in the American worker's pocket'* and *'creating jobs*'. **[5A]**

In September 2017, as Congress considered tax reform, Gravelle published a Congressional Research Service (CRS) report entitled 'Corporate Tax Reform: Issues for Congress'. Particular attention was given to research such as that of Azémar and Hubbard, which concerns behavioural responses and their implications for revenue and distribution. However, Gravelle's policy recommendation was to continue to assign most of the incidence to capital. Indeed, her report considers that a wage bargaining framework, as used in Azémar and Hubbard's research, may not be appropriate for the United States because the amount of labour income due to rent sharing is 'small' in that country **[5B]**. Nevertheless, influential academic research on rent sharing shows that it can in fact be substantial in the United States (Blanchflower, Oswald and Sanfey, *Quarterly Journal of Economics*, 1996).

In October 2017, Azémar and Hubbard's research was cited by the Council of Economic Advisers of the Executive Office of the US President in the report The growth effect of corporate tax reform and implications for wages **[5C]**. It states that:

> *'Results from Azémar and Hubbard (2015) also utilize cross-country changes in the corporate tax rates of OECD countries to measure the effects of corporate tax rate changes for worker wages. The paper measures changes in worker wages with and without controls for changes in value-added. The results imply a semi-elasticity of worker wages with respect to the corporate tax rate of -0.43 (an elasticity of -0.17 in the U.S. case), of which approximately three-fourths is related to the indirect channel and one-fourth to the direct channel'* **[5C]** (pp.22–23).

The elasticity of -0.43 is the average elasticity estimated with overall incidence for 13 OECD countries by Azémar and Hubbard (2015, Table 4, Column 2). The elasticity of -0.17 in the U.S. case is a calculation made by the Council of Economic Advisors based on the average elasticity of -0.43 of Azémar and Hubbard (2015) and their overall results showing that domestic labour's burden increases with the degree of capital openness (relatively high for the U.S.), with the density of unions (relatively low for the U.S.), and decreases with the size of an economy in the world capital market and in the world market supply (both relatively high for the U.S.).

Using this elasticity, in a discussion of the academic literature to justify the adoption of the pro-growth 'Tax Cuts and Jobs Act', the Council of Economic Advisers calculates that a decrease of the US tax rate could lead in the long run to an increase in real American wages of approximately USD4,000. The report states:

> *'Estimates from Azémar and Hubbard (2015) are closer to $4,000 […] As a whole, we view these estimates as indicating a U.S. Federal corporate rate reduction from 35 to 20 is likely to result in wage increases for U.S. households of $4,000 or more'* **[5C]** (p.25).

4.3. Impact on corporate tax reform

In December 2017, 'The Tax Cuts and Jobs Act' passed into law, with most of the changes coming into effect on 1 January 2018. One of the major changes (the first since 1993) is a reduction of the tax rate for businesses, with the US Federal corporate income tax rate going down from 35% to 21%.

In February 2018, the Economic Report of the President **[5D]** was published, citing Azémar and Hubbard's research among a body of academic literature on the effects of taxing corporate income. This sought to demonstrate that the empirical evidence indicates the responsiveness of wages to changes in corporate taxation. Combined with the annual report of the Council of Economic Advisers **[5C]**, the Economic Report of the President **[5D]** shows that the estimates from Azémar and Hubbard's study and the link they establish between corporate tax rates and wages was a key justification for a decrease in the US corporate tax rate.

4.4. Impact on Incomes

The first direct beneficiaries of the US tax reforms are corporations which benefit from a lower corporate tax rate. The second indirect beneficiaries are expected to be American workers via an increase in their wages. Workers in the United States have experienced long-term real wage stagnation and a persistent lack of economic progress. Given the link between corporate tax rates and wages, as found in Azémar and Hubbard's research **[3.1]**, the US pro-growth tax plan 'Tax Cuts and Jobs Act 2017' would lead to a rise in incomes for American workers, especially low-skilled ones whose inability to move jobs renders them vulnerable to the corporate tax burden.

Azémar and Hubbard's research **[3.1]** has thus impacted on this landmark US tax reform, the most significant since 1986, in two ways. Its primary impact has been on the recognition in US tax policy of academic research findings according to which corporate tax is not solely borne by capital. This countered the continuing Congressional Research Service view that incidence falls mostly on capital.

Although the effects of this reform have yet to work through and are more difficult to disentangle as a result of COVID-19 and subsequent economic support measures, there has been a secondary impact on decisions within corporations about the distribution of the product between capital, labour and government. This is an issue which the OECD's Base Erosion and Profit Shifting project is also addressing.

5. Sources to corroborate the impact

[5A] Richard Rubin, 'Who Ultimately Pays for Corporate Taxes? The Answer May Color the Republican Overhaul,' Wall Street Journal, 8 August 2017: https://www.wsj.com/articles/who-ultimately-pays-for-corporate-taxes-the-answer-may-color-the-republican-overhaul-1502184603 ***[PDF Available]***.

[5B] Jane G. Gravelle, 'Corporate Tax Reform: Issues for Congress', Congressional Research Service, RL34229, 22 September 2017: https://fas.org/sgp/crs/misc/RL34229.pdf ***[PDF Available]***.

[5C] Council of Economic Adviser of the Executive Office of the U.S. President, 'The Growth Effect of Corporate Tax Reform and Implications for Wages', October 2017. *(p. 22) (p. 25): https://www.whitehouse.gov/sites/whitehouse.gov/files/images/Corporate%20Tax%20Reform%20and%20Growth%20Final.pdf ***[PDF Available]***.

[5D] Economic Report of the President together with The Annual Report of the Council of Economic Advisers, February 2018. (p.31) (p.449): https://www.whitehouse.gov/wp-content/uploads/2018/02/ERP_2018_Final-FINAL.pdf ***[PDF Available]***.