



## Do decoupled payments affect investment financing constraints? Evidence from Irish agriculture



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### ABSTRACT

This paper empirically tests whether decoupled subsidies decrease investment financing constraints faced by farms. Using a panel dataset from Ireland over the period 2005–2010, we test whether the CAP decoupled subsidy payments reduce credit constraints by altering the risk profile of farm earnings. We test for financing constraints in a neoclassical *Q* model using investment–cash flow sensitivities. Our econometric methodology controls for censoring, heterogeneity and endogeneity. We find that decoupled subsidies do reduce credit constraints. The effect is greater for farms that face higher constraints: dairy farmers and younger farms. This evidence suggests that, over and above the effect on production indicated in previous research, decoupling affects farm investment through financial channels.

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### Introduction

The production inducing effects of decoupled payments have received considerable attention in the agricultural economics literature in both the US and the EU. The extent to which decoupled payments may affect farm production is an important policy question in the context of the World Trade Organisation (WTO). The “green boxing” of decoupled payments, within the WTO discipline, hinges on the criterion that these payments have no, or at most minimal, trade-distorting effects or effects on production. As a result, agricultural policy analysts continue to grapple with the question of what, if any, effect decoupled payments have on production levels.

The various mechanisms through which decoupled payments may affect production decisions are well reviewed in the literature (see for example [Goodwin and Mishra \(2005, 2006\)](#), [Femenia et al. \(2010\)](#) and [Weber and Key \(2012\)](#)). Decoupled payments lead to a wealth effect which can, inter alia, induce farmers to take more “risky” production related decisions, facilitate the subsidisation of fixed costs on unprofitable farms and increase non-labour income allowing farmers to work less but maintain consumption. The income risk protection offered by decoupled payments has become particularly valuable in recent years due to the surge in commodity price volatility. Decoupled payments may also have

the effect of stimulating farm investments in the presence of capital market imperfections such as financial constraints on borrowing. Lenders may perceive recipients of decoupled payments as being more credit worthy because the payments increase collateral values for land owners and increase repayment capacity, reducing lenders’ exposure to risk of loan defaults ([Burfisher and Hopkins, 2003](#)). Despite the extensive literature on the impact of decoupled payments, modelling the production inducing effects of such payments remains notoriously complex, [Moro and Sckokai \(2013\)](#).

While the theoretical impact of decoupled payments on investment, and as a consequence production is well understood, relatively few papers have applied empirical models to quantify this relationship. As noted by [Sckokai and Moro \(2009\)](#) the impact of coupled direct payments on farmers’ decisions is well researched but the impact of decoupled payments on investment decisions has been neglected. Indeed, [Moro and Sckokai \(2013\)](#) note that the effect of decoupling on investment financing constraints is one of the most underdeveloped areas of decoupling research. Building on the existing literature ([Moro and Sckokai, 2013](#); [Latruffe et al., 2010](#)), our research investigates one particular channel through which decoupling may influence investment behaviour. We empirically test the effect of decoupling on investment financing constraints using investment–cash flow sensitivities to identify financing constraints. We use Irish National Farm Survey data from 2005 to 2010 to estimate a fundamental *Q* model of investment ([Gilchrist and Himmelberg, 1995](#)). This method is used in an agricultural context by [Benjamin and Phimister \(2002\)](#),

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Bierlen and Featherstone (1998), Chaddad et al. (2005) and O'Toole et al. (2014).

We find evidence of credit constraints through a positive relationship between the farms' financial cash flow and investment. The magnitude of the effect is greater for smaller farms. To test the effect of decoupling on financing constraints, we use a measure of the degree to which income is protected against risk through receiving a non-production related subsidy. We define risk protection, RP, as the ratio of decoupled subsidies received by the farm relative to total farm income. Interacting RP with measures of financing constraints, we find a negative and statistically significant effect of decoupling on credit constraints: as income is increasingly earned from risk-free decoupled subsidies, financing constraints are lowered. This effect is strongest for younger farmers and is increasing as farm size increases. Our findings, which empirically show the link between decoupling and investment through the financial channel, may raise further questions as to the suitable categorisation of decoupled payments as "green box", non-production inducing, subsidies under the WTO framework.

Although decoupled payments are considered a "risk free" source of income, there is some institutional risk surrounding their long term existence and value. The most recent reform of the CAP occurred in parallel with the Multi-annual Financial Framework (MFF) setting the budget of the EU for the 2014–2020 period. Given the pressure to reduce the MFF, there was intense speculation that this would threaten the funding of the CAP in general and by consequence the future value of decoupled payments. In the end the new MFF allowed for only a 6.4% reduction in expenditure on CAP pillar I policies relative to the 2013 levels, Matthews (2014).

The calculation can also be done in other ways, as noted above. If the 'status quo' expenditure is based on the 2013 commitments  $\times$  7 years and compared to the total allocation for the 2014–2020 period, then Pillar 1 expenditure falls by 6.4%.

At an individual farm level, the most recent CAP reform has also threatened the value of the payments. The processes of both internal and external convergence, moving to a flatter payment structure within Member States and to a more equitable budget structure across Member States, may have implications for the value of decoupled payments to individual farmers. Farmers in Ireland will not be affected by external convergence and given that the Irish government selected the most gradual model for internal convergence, the overall impact on individual farmers' payments is likely to be far less than initially anticipated.

The paper proceeds as follows: Section 2 reviews previous studies of the impact of decoupled payments on farm investment. In Section 3 the empirical approach to estimating the model is outlined. The data are explained in Section 4, followed by a presentation and discussion of the results in Section 5.

## Review of literature

There is a large body of research that focuses on the effects of decoupling on farm outcomes in both the US (Adams et al., 2001; Goodwin and Mishra, 2005; Femenia et al., 2010; Weber and Key, 2012) and in a European CAP context. In spite of the broad literature dealing with policy evaluation and decoupling, only a few papers deal directly with its effects on investment behaviour, with Sckokai and Anton (2005), Coyle (2005) and Serra et al. (2009) being some notable exceptions. A number of studies have used simulation based models to evaluate the effect of CAP reforms on investment behaviour (Paloma et al., 2008; Viaggi et al., 2010; Gallerani et al., 2008). A general review of the literature and evaluation of investment under CAP reform is presented in Viaggi et al.

(2011a,b). As noted by Moro and Sckokai (2013), even fewer studies have tested the effects of decoupling on access to finance.

A number of studies are relevant to our research. Hennessy (1998) explored the interplay between decoupled payments, farmers' risk preferences and production decisions. He concluded that if farmers' aversion to risk declines as income increases, then an increase in wealth as a consequence of the decoupled payment can induce farmers to take riskier production decisions, and thus increase output compared to the situation in which no decoupled payment is made. Sckokai and Moro (2009) use FADN data<sup>1</sup> from Italy to examine the impact of the Single Farm Payment (SFP)<sup>2</sup> on farm investment and output. They use a dynamic model explicitly accounting for farmers' risk preferences and conclude that, although the SFP does affect farm investment, the effect is small relative to the effect of output prices and/or coupled payments. The channel by which SFPs are linked to investment in their paper is through price volatility. Serra et al. (2009) consider the effect of production flexibility contract payments on dynamic investment decisions of farmers in the US using micro data from the Kansas Farm Management Association. They estimate a dual model of investment under uncertainty taking into consideration irregularities in the capital stock adjustment cost function. Using a threshold regression model, they find that decoupled transfers have a strong effect on investment in a dynamic setting.

While these studies consider the effect of decoupling on investment in agriculture, they do not explicitly explore this relationship through financial channels i.e. faced with frictions in capital markets (a wedge between the internal and external cost of capital), do decoupled payments act to reduce farm financing constraints? The main channel through which decoupled subsidies affect financing constraints is by reducing the risk related to borrower repayment capacity, providing more certainty to financial providers (Vercammen, 2007). The risk-free income stream from decoupled payments is taken into account by financial institutions when evaluating credit applications. This facilitates easier access to credit for farmers whose income is earned through market sources and is subject to both market and business operational risk.<sup>3</sup> Additionally, in the European Union under the CAP scheme, single farm payments (SFP) are linked to acreage. As such, the payments feed into land valuations providing farmers with additional collateral to support borrowing capacity (Vercammen, 2007).

There may also be a direct effect (Latruffe et al., 2010) whereby decoupled subsidies add to the internal pool of finance available to the farmer and reduce the requirement to seek external finance. Taking these points in totality suggests that decoupled subsidies should decrease financing constraints and ease access to external finance for farm operators.

Two specific papers, already noted, are of direct relevance to our research and require further attention. Vercammen (2007) develops a theoretical framework which links decoupled payments to farm investment through the risk of bankruptcy. The model predicts that direct payments reduce the risk of bankruptcy therefore reducing the cost of capital for investing farms. This stimulates higher and more aggressive investment behaviour. He finds that the effect varies with the degree of equity in the farm operation and the time horizon of the investment decision. In providing a

<sup>1</sup> The Farm Accountancy Data Network (FADN) is an instrument for evaluating the income of agricultural holdings and the impacts of the Common Agricultural Policy. The concept of the FADN was launched in 1965, when Council Regulation 79/65 established the legal basis for the organisation of the network. It consists of an annual survey carried out by the Member States of the European Union. See <http://ec.europa.eu/agriculture/frica/>.

<sup>2</sup> The single farm payment is the main decoupled payment in the EU.

<sup>3</sup> The reduction in operational risk suggests that constraints should be even lower than for farms whose income is based on coupled subsidies due to the removal of the requirement to undertake production.

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