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Do Artists Benefit from Resale Royalties? An Economic Analysis of a New EU Directive

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Do Artists Benefit from Resale Royalties? An Economic Analysis of a New EU Directive

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Abstract

According to a new European Union directive, artists, whose works are resold, are entitled to a share of the sales price. The principal aim of this initiative is to let the artists participate in the economic success of their work.

Our analysis shows that the new directive is most likely to place the artists in a worse economic position. The analysis of the relation between the artist and his dealer as an incentive compatible contract leads to further objections against the new EU directive. However, the paper also illustrates under which conditions a resale royalty is, at least, an incentive compatible contract.

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Contents

1 Introduction **2**

2 Resale rights and lifetime income **5**
2.1 Initial market and resale market 5
2.2 Introduction of a droit de suite 7

3 Incentive compatible contracting **9**
3.1 Dealer's effort 9
3.2 Artist's effort 10
3.3 Both parties' efforts 12

4 Risk-averse artists **14**

5 Conclusion **16**

References **17**

1 Introduction

This paper demonstrates the usefulness of economic analysis for legal theory, and in particular for law-making. Economic theory may be able to provide answers to simple questions law-makers should ask. The title of this paper is an example of such a simple question: will the effects of a new EU directive meet the expectations of law-makers, or will the outcome be just the opposite? Without a behavioral theory, it is hardly possible to predict the impact of a new law on the behavior of the concerned actors. Economic analysis does not promise to be simple, nor does it promise to give simple answers. However, it provides at least some answers to lawyers' questions.

The European Council has recently adopted[1] the European Commission's *"Amended Proposal for a European Parliament and Council Directive on the resale right for the benefit of the author of an original work of art"*.[2] As soon as the European Parliament agrees to the Council's position, the new EU directive would require the member states of the European Union to establish resale rights. This "droit de suite",[3] provides artists the right to collect a royalty based on the resale price of their work.[4] The European Commission's initiative was driven by three motives:

[1]See FAZ (2000).
[2]OJ (1998).
[3]Literally: "follow-on-right"; in German "Folgerecht".
[4]Perloff (1998, 645). Taken literally, this principle would give the artist a claim on a share of the resale price even if it is lower than the initial price. Karp/Perloff (1993, 167f.) discuss resale royalties based on the difference between the resale and the initial price ("capital gains"), however without deriving a systematic effect of the two regimes on the artist's income. See also Bolch/Damon/Hinshaw (1988, 75).

- to ensure *"that creators of graphic and plastic works of art share in the economic success of their original works of arts"* (Recital 2);

- *"to redress the balance between the economic situation of creators of graphic and plastic works of art and that of other creators who benefit from successive exploitation of their work."* (Recital 2);

- a better functioning of the internal market in the Union. According to the Commission, *"disparities with regard to the existence and application of the artist's resale right by the Member States have a direct negative impact on the proper functioning of the internal market in works of art"* (Recital 7). The application or non-application of such a right is considered to be a factor that contributes to distortions of competition as well as displacements of sales within the Community (Recital 6).

The Commission expects about 250,000 artist to benefit from the introduction of a resale royalty in the EU.[5] Currently, Belgium, Denmark, France and Germany regularly enforce resale rights. Droit de suite also exists in Greece, Italy, Luxembourg, Portugal and Spain, but without enforcement on a regular basis.[6] Britain, the country with the most important art market in Europe, does not have such legislation, as is the case in Ireland, Austria, and the Netherlands; these EU member states opposed, until recently, the proposal.[7] Since then, some modifications of the Commission's initiative have been made in order to achieve consent. In the United States, only California has adopted a droit de suite.[8]

In this paper, we take a closer look at the first of the Commission's above mentioned motives. Our analysis is based on the idea that a dealer has three economic functions which provide the gains from trade between the artist and the dealer:[9]

- the dealer may have better access to capital markets, i.e. pay a smaller interest rate, than the artist and therefore serves as an intermediary for cheap credits;

- the dealer may (perhaps as well as the artist) spend effort on the enhancement of consumer valuation in the resale market for the work of the artist;

[5] EU Commission (1999).

[6] See O'Hagan (1998, 86), and FAZ (1999).

[7] FAZ (1999). In March, the Council has agreed upon introducing the new directive, supported by the votes of 13 member states, whereas Austria and Belgium did abstain, see FAZ (2000).

[8] See Karp/Perloff (1993, 163), who also mention Algeria, the former Czechoslovakia, Chile, Poland, Sweden, Tunisia, and Uruguay to provide such guarantees - however, in most countries the artists do not actually receive resale proceeds.

[9] In Kirstein/Schmidtchen (2000), an additional function is analyzed: an expert dealer creates value by his ability to tell good from less talented artists.

- if the artist is risk-averse, the dealer may provide insurance.

The impact of the introduction of a droit de suite on the dealer's economic functions is analyzed separately in the subsequent sections. Section 2 focuses on the function of the dealer as a credit intermediary, and therefore excludes risk-aversion and effort considerations. It is assumed that the dealer's discount factor is higher than the artist's, reflecting the lower interest rate the dealer pays to obtain credit. We show that the artist's lifetime income is always decreased when resale royalties are introduced.

A similar result was derived by KARP/PERLOFF (1993). Their model neglects the discounting of future payoffs whereas in our model discounting plays an important role. Furthermore, the KARP/PERLOFF (1993) model puts the artist in a surprisingly strong market position: he sets the initial market price and the resale royalty, whereas the dealer only chooses promotional effort and the resale price. Our analysis goes beyond this, taking into account that artists may have a weaker position in the initial market.

In section 2, the analysis is limited to the distribution of a given cooperation rent, an aspect that was particularly stressed in the EU initiative. This neglects the incentive effects a droit de suite may have. Section 3 takes into account that a droit de suite may affect the two parties' effort to promote the value of the artist's work. Promotional effort may increase the cooperation rent that can be distributed between the two parties. First, we follow KARP/PERLOFF (1993) and assume that the future valuation of the artist's work depends only on promotional effort of the dealer. We show that the optimal resale royalty is zero. An argument in favor of a resale royalty ("share-cropping") contract can only be derived if customers' valuation in the resale market depends on the efforts of both artist and dealer. However, it would require additional reasons to justify a mandatory droit de suite, since artists and dealers are free to agree upon resale royalties by contract.

Section 4 introduces risk-aversion on the part of the artist. In such case, the introduction of a droit de suite would have two effects: it forces the artist to accept a risky lottery instead of a sure income; and secondly, even if a resale royalty had a positive net effect on the artist's monetary lifetime income due to its incentive effect, his lifetime utility may be decreased. This effect, which we call *the "paradox of risk-aversion"*, can occur if the income of the artist increases over time. Section 5 briefly summarizes the arguments, and discusses in which direction legal harmonization in Europe should reasonably move.

2 Resale rights and lifetime income

2.1 Initial market and resale market

Droit de suite intends to let the artist participate in the future economic success of his work. In some cases indeed, the resale price largely exceeds the price that was initially paid by the dealer. A widely held view of the art business is the image of a *"collector who, having purchased a work of art for relatively little, resells it for a great deal more, pocketing the entire profit and leaving the artist whose effort created the work and whose subsequent accomplishments may have contributed to its increase in value, with no part of such increase. It is the image of Robert Rauschenberg and Robert Scull in tense confrontation after the 1973 auction at which Scull resold for 85 000 Dollars, a work for which he had originally paid Rauschenberg less than 1 000 Pounds."*[10]

However, there is a simple economic reason for the enormous differences in the prices at which dealers buy and sell art: from the dealers point of view, the works of young and unknown artists are lotteries. He will frequently be unable to resell the pieces, and of those sold only a few will be worth large sums.

Consider a simple example: a typical dealer buys one hundred pieces of art, ten of which will be worth € 100.000 some years later. The others will yield no considerable return. Neither the dealer, nor the artists know the future value of a specific piece of art. Assume both parties to be risk-neutral. The interaction between dealer and artist, concerning one piece of work, takes place in three steps (for simplicity assume that the piece is resold only once):

1. the dealer buys a piece of art from the artist (initial market);
2. nature reveals the artist's true type (i.e., the valuation of the collectors);
3. the dealer sells the piece to a collector (resale market).

The initial market price is governed by three factors: the dealer's maximum willingness to pay, the artist's minimum willingness to accept, and the market conditions. Let us first derive the dealer's maximum willingness to accept. We assume the dealer to be aware of the fact that only ten percent of all purchases will turn out to be valuable in the final market.[11] Hence, when considering his situation in the initial market, he expects an average resale price of € 10.000 for each of the pieces he buys. Assume furthermore that the dealer discounts future gains by 20 percent. This discount factor of 0.8 reflects the interest rate and the time until the resale is realized.[12] Thus, the dealer's present value of this

[10] Weil (1983), c.f. O'Hagan (1998, 100, Fn. 18).

[11] In Kirstein/Schmidtchen (2000), we take a closer look on expert dealers that are able to distinguish between good artists and less talented ones.

[12] If the annual interest rate is denoted as i and the resale takes place t years after the initial purchase, then the discount factor for the future returns is $1/(1+i)^t$. Obviously, the discount factor is higher if the interest rate is lower.

portfolio is € 8.000, which is the maximum amount the dealer would be willing to pay.[13]

The artist will accept a price in the initial market if it exceeds the present value of the expected return the artist earns if he stores the work until he sells it on his own.[14] Let us assume that the artist's discount factor is 0.6, thus smaller than the dealer's. This reflects the fact that the dealer may have better access to the capital market (a lower interest rate means a higher discount factor). Additionally, young artists will only very occasionally be able to provide collateral if they apply for credit directly. The artist's minimum willingness to accept is the discounted value of the average return in the resale market, € 6.000.

The difference between the dealer's € 8.000 and the artist's € 6.000 is the cooperation rent that is created if the dealer and the artist conclude a contract. If the initial market is competitive, then the elasticities of demand and supply govern the distribution of this cooperation rent by the initial market price. In bilateral monopolies, it is the relative bargaining power of the parties that determines the price and thereby the distribution of the cooperation rent. Thus, the split rate could be a result of a competitive market process as well as of bilateral monopoly negotiations and is assumed to be independent of whether a droit de suite is introduced or not. This approach allows us to model the effects on prices without having to explicitly model the market structure.[15]

A split rate close to 1 could be interpreted as the market situation of a young artist who is already well established (in economic terms: whose work is heterogenized), and who has some market power in the inital market. This would be the case if dealers outbid each other to come into business with this artist. On the other hand, a split rate close to zero refers to the situation of completely unknown young artists whose works are, from the dealer's point of view, perfect substitutes. In this case, the artists outbid each other to get access to a dealer.

For the sake of simplicity, we assume that the cooperation rent is equally shared among the dealer and the artist. Therefore, the initial market price, without a droit de suite is calculated as

$$0.5 \cdot \text{€}\, 8.000 + 0.5 \cdot \text{€}\, 6.000 = \text{€}\, 7.000 \tag{1}$$

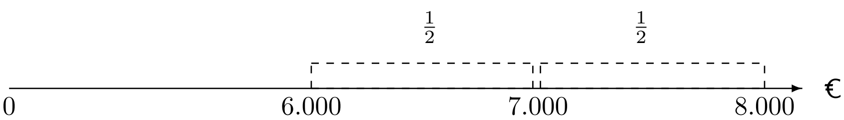
Figure 1 illustrates this method of determining the market price. Recall that the dealer's maximum willingness to pay is € 8.000, and the artist's minimum willingness to accept is € 6.000. The cooperation rent of € 2.000 is split equally

[13] If the dealer had operating costs, these would further decrease his maximum willingness to pay, but the effect of the droit de suite would qualitatively be the same.

[14] O'Hagan (1998, 90) remarks that the artist "always has the possibility of holding on to his/her work for investment purposes, if there is reason to believe that the work will appreciate". Only for simplicity we assume the artist produces at zero marginal costs.

[15] Karp/Perloff (1993, 165) also analyze the case of an artist-owned gallery. In terms of our model, this kind of vertical integration would be reflected by a split rate of 1 (the artist internalizes the whole cooperation rent) and equal discount factors. Obviously, the dealer-artist cannot be made better off by introducing a droit de suite.

Figure 1: The initial market price



between the two parties. Each one gets € 1.000 of the cooperation rent. This is realized by an initial market price of € 7.000.

2.2 Introduction of a droit de suite

If a droit de suite is established, either by mandatory law or by contract, then the artist holds a right to a share $\rho < 1$ of the resale price. A resale royalty is a kind of excise tax on art that must be paid each time the piece is resold.[16] It can also be seen as an attenuation of the buyer's property rights. Both points of view allow for the same prediction: the buyer's maximum willingness to pay is decreased. A rational dealer will discount the expected resale royalty and subtract its present value from the amount he is willing to pay if a droit de suite were not in place. We assume that the dealer (and not the collector who buys the work in the resale market) must bear this "excise tax".[17] Thus, the dealer's maximum willingness to pay drops to $(1-\rho) \cdot$ € 8.000.

The artist compares two options: to store the work yields € 6.000, which is the expected return, weighted with the artist's discount factor. If he uses this option, then the droit de suite plays no role. On the other hand, the artist may sell his work to the dealer. Let p denote the initial market price paid by the dealer if a droit de suite is in place. The artist not only receives the current return p, but also a claim to the resale royalty. However, this additional income is uncertain and only due in the future; it therefore must be discounted. The present value of this claim is $\rho \cdot$ € 6.000. Hence, an initial market price p is acceptable for him if $p + \rho \cdot$ € 6.000 is greater than € 6.000. Stated equivalently, the artist accepts a price p if

$$p > (1-\rho)\text{€ } 6.000 \qquad (2)$$

The right hand side of inequality (2) denotes the artist's minimum willingness

[16]The EU Commission rejects the view that resale royalties are "just a further tax", since the proceeds go to the artist, not the state, see EU Commission (1999). However, the economic effect in the resale market is just the same as if a tax were imposed.

[17]This assumption seems to be rather reasonable when the supply in the resale market is inelastic, which is the case in our model: the supply in the resale market equals the amount traded on the initial market and therefore is constant.

to accept if a droit de suite is introduced. Calculating the market price p the same way as in equality (1) leads to

$$p = 0.5 \cdot (1-\rho) \cdot € \, 8.000 + 0.5 \cdot (1-\rho) \cdot € \, 6.000 \tag{3}$$

since the split rate is assumed to be independent of whether a droit de suite is introduced or not. Thus, p equals $(1-\rho) \cdot € \, 7.000$. The introduction of a droit de suite, therefore, leads to an initial market price which is necessarily smaller than the one without resale royalties.[18]

The difference in market price with and without droit de suite is $\rho \cdot € \, 7.000$. The artist's return at the time he sells his piece of art to the dealer is reduced by this amount. The net effect of a droit de suite on the present value of the artist's lifetime income is the present value of the resale royalty minus the decline in the initial market price:

$$\rho \cdot € \, 6.000 - \rho \cdot € \, 7.000 = -\rho \cdot € \, 1.000 \tag{4}$$

Under the assumptions we have made, this net effect is always negative. Note that our result not only proves true for the example we used, but also for any other split rate or other resale market returns.[19] The net effect would be positive if, and only if, the artist's discount factor would exceed the dealer's. However, in such a case, a cooperation rent would cease to exist: gains from trade can only occur between the artist and the dealer if the discount factor of the latter exceeds that of the former.[20] If this is the case, then the droit de suite puts the artist definitely into a worse position. Hence, the EU directive not only fails to achieve its most important goal, to let the artists participate in the economic success of their work, but leads to the opposite result.

Note that the artist's loss increases in the split rate.[21] The better his position in the initial market, the more the artist looses when a resale royalty is introduced. Hence, if a droit de suite is established, successful artists have more to lose. This theoretical result may explain the observation of PARACHINI (1990, F3), according to which 40 established artists (among them Wilem de Kooning and Roy Lichtenstein), in 1988, opposed a US Congressional initiative to introduce a resale royalty in all US states. According to the report, the artists' reason for their opposition was that a droit de suite "might make it even harder for unknown artists to attract the interest of collectors". In the light of our analysis this is correct, yet also appears to be somewhat hypocritical.[22]

[18] See PERLOFF (1998, 645), KARP/PERLOFF (1993), HANSMAN/SANTILLI (1996, 69).

[19] See KIRSTEIN/SCHMIDTCHEN (2000).

[20] For the moment, we have left aside other economic reasons for cooperation rents, such as insurance, screening, or promotional effort. Insurance and promotion are analyzed in the subsequent sections.

[21] This is proven in KIRSTEIN/SCHMIDTCHEN (2000).

[22] The bill has not passed Congress, see KARP/PERLOFF (1993, 163). LANDSBURG (1989) argues in the opposite direction: a droit de suite may shift income from less known to successful artists. However, SOLOW (1990) rejects this argument, see KARP/PERLOFF (1993, 174f.), endnote 6.

3 Incentive compatible contracting

3.1 Dealer's effort

The analysis of the relationship between an artist and a dealer within a simple market framework might be seriously misleading. Often the relationship has a pooling character, like team production, which can best be analyzed using the concept of relational contracts. According to this concept the artist and the dealer are playing a repeated game in good faith. Neither is trying to gain an advantage at the expense of the other side. Rather, both see themselves as members of a team acting co-operatively in order to increase the economic value of the relationship.

A dealer incurs substantial costs in buying, owning, conserving and promoting sales. He has usually tied up specific investments in the work of art, expecting a reasonable rate of return or, in economic terms, a "quasi rent". If resale royalties reduces this quasi rent, the incentives of the dealers may be affected in a way that harms the artist.

As in Karp/Perloff (1993), we first analyze the situation in which only the promotional effort of the dealer is relevant to the customers' valuation in the resale market. Let us, for simplicity, distinguish two cases:

- the dealer does not spend additional effort, hence the average resale price remains € 10.000;
- or the dealer undertakes additional effort to promote the value of the artist's work.

Assume that the additional effort costs the dealer an amount of e, and increases the average value of the artists work to, say, € 15.000.[23] Thus, high effort increases the average return in the resale market by € 5.000. In this section, we neglect discounting of future payoffs and focus on effort only, hence the average resale price reflects the parties' maximum willingness to pay and minimum willingness to accept, respectively, in the initial market. To analyze the impact of promotional effort on the value of the artist's work in the resale market, we have to distinguish two concepts: the first-best effort and the individually rational decision.

The first-best effort maximizes the common profit of the dealer and the artist, disregarding the possible conflict between the two parties. It would be first-best to spend high effort if the increase in valuation in the resale market exceeds the effort costs. Hence, it is first-best to spend high effort if, and only if,

$$e < \text{€}\,5.000 \tag{5}$$

[23] In principle, this increase can have two reasons: the resale value of the artist's work is increased, or the probability that an artist turns out to be successful increases (or both).

The individual decision of the dealer is not necessarily based on this comparison. The dealer spends high effort if his individual share of the return exceeds his effort costs. Recall that, if a droit de suite is established, the dealer only receives a share $(1-\rho)$ of the return in the resale market. Therefore, he is motivated to spend high effort if, and only if,

$$e < (1-\rho) \cdot € \, 5.000 \tag{6}$$

A comparison of the inequalities (5) and (6) leads to the following results:

- If $e > € \, 5.000$, then it is efficient not to spend high effort, and the dealer makes the efficient choice.
- If $e < (1-\rho) \cdot € \, 5.000$, then it is efficient to spend high effort, and the dealer makes the efficient choice.
- If e is in between (i.e., $(1-\rho) \cdot € \, 5.000 < e < € \, 5.000$), then it would be efficient to choose high effort, but the dealer is not motivated to do so and chooses low effort instead.

The interval in which the dealer behaves inefficiently vanishes if $\rho = 0$. Thus, from an efficiency point of view, the optimal mandatory resale royalty would be $\rho = 0$. This is not only in accordance with the result in Karp/Perloff (1993, 165),[24] but also with the standard results of contract theory, given that both artist and dealer are risk-neutral. In such a situation, a "sell the shop" contract would be optimal: the dealer pays a fixed amount to the artist and becomes residual claimant. In contrast to this, a mandatory droit de suite would force the parties into a "share cropping" contract, which induces the dealer to choose a suboptimal low effort.[25]

A "sell the shop" contract allocates the entire risk to the dealer. If he were assumed to be risk-averse, whereas the artist is risk-neutral, then a reallocation of risk would be efficient. In such a case, a resale royalty could be an efficient contract. This, however, does not seem to be the world the EU Commission had in mind when making its proposal.

3.2 Artist's effort

Let us turn to the second scenario: the expected return on the resale market depends on the effort of the artist rather than of the dealer. An artist has several ways to increase the value of a piece he has already sold to a dealer, such as

[24] Even though these authors do not perform a rigorous derivation of optimal contracts, they come to the result that resale royalties reduce the dealer's incentives to spend promotional effort.

[25] This holds in general if the dealer's choice set is continuous; if he chooses his effort from a discrete set, such as high or low, share cropping could be optimal as well. However, "sell the shop" would still be optimal in this case and nothing is gained by a mandatory resale royalty.

producing additional pieces of high quality, investing in his skills, seeking further inspiration, and making contacts with potential buyers and intermediaries.[26] In principle, the artist's effort may have a substitutional or complementary effect on the expected return on his earlier work. Here, we consider the complementary effect: future work of high quality is assumed to increase the valuation of the life's work of the artist.[27]

If the artist spends high effort, he bears costs $f > 0$, whereas in the case of low effort his costs are 0. Let us again assume that this increase amounts to € 5.000. Thus, it is first-best to spend high effort if, and only if, $f <$ € 5.000. From the artist's point of view, it is individually rational to spend high effort if his share of the increased return (namely $\rho \cdot$ € 5.000) exceeds the effort costs f. Just as in the case above, we have three cases to distinguish:

- if $f >$ € 5.000, then the artists abstains from high effort, which is efficient to do so;
- if $f <$ € 5.000 $\cdot \rho$, then the artists chooses high effort, which is efficient to do so;
- if $\rho \cdot$ € 5.000 $< f <$ € 5.000, then high effort would be efficient, but from the artist's point of view it is better to choose the inefficient low effort.

The interval in which the artist may behave inefficiently vanishes if $\rho = 1$, which implies that the artist not only receives a share of the resale price, but the whole return. In such a setting, a dealer is not necessary, and the entire risk should be borne by the artist. It would be optimal if the artist simply stores his pieces and waits until they have gained their resale value.

If, however, the artist were assumed to be risk-averse, then it would be inefficient to let him bear the entire risk.[28] In this case, a contract should balance the artist's desire for insurance against the motivational effect of the residual claim. However, such a contract would not lead to the first-best solution, which is not attainable due to the risk-aversion of the artist. A resale royalty may at most be second-best: the artist sells the main part of the residual claim in turn for an up-front payment to the dealer, yet the prospect of receiving a share of the uncertain resale returns keeps the artist motivated to spend at least some effort on the enhancement of these returns.

[26] The impact of the artist's activities on the value of a piece of art sold is not taken into consideration in Karp/Perloff (1993).

[27] The substitutional effect would be reflected by the idea of Coase (1972): the later output of a monopolist may be seen as a substitute for his earlier works which tends to decrease the value of each piece of work. See Karp/Perloff (1993, 169) and Schmidtchen/Koboldt/Kirstein (1998, 789).

[28] We take a closer look on risk-aversion and droit de suite in the next section.

3.3 Both parties' efforts

Things are more complicated when the expected resale return depends on the efforts of both the artist and the dealer. First of all, the contract should deal with the fact that now both parties may have an incentive to spend less than the optimal effort (double-sided moral hazard). Secondly, the parties' efforts may influence each other. In particular, they may have a complementary or a substitutional effect. We consider the complementary effect here: future work of high quality does not only tend to increase the value of the life's work of the artist, but also increases the marginal effect of the dealers effort (and vice versa).[29]

To keep matters simple, we limit the choices of the parties to high and low effort. Let us denote the high effort of the dealer as $e = 1$ and of the artist as $f = 1$, whereas $e = f = 0$ represents both parties' low effort. The expected return on the artist's work is denoted as $q = q(e + f)$. Three levels of q have to be distinguished: $q(2)$, if both parties contribute; $q(1)$ if only one party spends effort; $q(0)$, if neither party contributes.

The marginal effect of either party's effort on the expected return is positive, thus $q(2) > q(1) > q(0)$. The two party's efforts are strategic complements, hence the marginal effect of one actors contribution is higher if the other has made a contribution as well: $q(2) - q(1) > q(1) - q(0)$.

Table 1: The effort game

dealer artist	$e = 1$	$e = 0$
$f = 1$	$(1-\rho) \cdot q(2) - k$ $\rho \cdot q(2) - c$	$(1-\rho) \cdot q(1)$ $\rho \cdot q(1) - c$
$f = 0$	$(1-\rho) \cdot q(1) - k$ $\rho \cdot q(1)$	$(1-\rho) \cdot q(0)$ $\rho \cdot q(0)$

The parties may bear different costs for high effort: let us denote the artist's cost as c and the dealer's as k. If both spend effort, the (expected) social net surplus of the two parties is $q(2) - c - k$, which we assume to be positive and greater than $q(0)$: it would be efficient if both were spending effort. However,

[29] The resulting interactive decision-making situation is called a "supermodular game", see FUDENBERG/TIROLE (1992). In case of a substitutional effect, the marginal effect of one party's effort on the expected return is diminishing in the effort chosen by the other party.

this is not necessarily the outcome if the parties maximize their own (expected) payoff. Table 1 shows the interactive decision situation as a game in strategic form. Recall that the artist's share of the expected return is denoted as ρ, hence the dealer's share is $(1-\rho)$.

The efficient outcome $e = 1, f = 1$ is a Nash equilibrium[30] if, and only if, the following relations hold: $\rho \cdot q(2) - c > \rho \cdot q(1)$ (which guarantees that $f = 1$ is the best reply for the artist if the dealer chooses $e = 1$), and $(1-\rho) \cdot q(2) - k > (1-\rho) \cdot q(1)$ (which implies that $e = 1$ is the best reply to $f = 1$). Both conditions say nothing more than the individual costs of choosing high effort should be smaller than the individual gain, given the other side chooses high effort as well. The two conditions can be equivalently expressed as

$$\frac{c}{q(2)-q(1)} < \rho < \frac{q(2)-q(1)-k}{q(2)-q(1)} \tag{7}$$

If the parties agree upon a ρ that satisfies condition (7), then this contract turns the efficient outcome into a Nash Equilibrium.[31] Note that the interval in (7) is non-empty if, and only if, $q(2) - q(1) > c + k$. If this condition is violated, then there is no value of ρ that turns $(e = 1, f = 1)$ into a Nash-equilibrium.

A numerical example might help to understand the meaning of condition (7): let q(2)= € 100.000, q(1)= € 10.000 and q(0)= € 0. This satisfies the complement property, since $100.000-10.000 > 10.000-0$. Let furthermore be c= € 9.000 and k= € 45.000, which satisfies the efficiency condition $(100.000 - 45.000 - 9.000 > 0)$. Table 2 shows the decision situation in this example (the figures are in € 1.000).

Table 2: Example effort game

d a	$e = 1$	$e = 0$
$f = 1$	$100 \cdot (1-\rho) - 45$ $100 \cdot \rho - 9$	$10 \cdot (1-\rho)$ $10 \cdot \rho - 9$
$f = 0$	$10 \cdot (1-\rho) - 45$ $10 \cdot \rho$	0 0

[30] A strategy combination is a Nash equilibrium if no player has an incentive to deviate from it.
[31] It is possible that $(e = 0, f = 0)$ as well is a Nash equilibrium; a case which is not of interest for our analysis here.

Using these parameters, condition (7) translates to $9.000/90.000 < \rho < 45.000/90.000$, or $0.1 < \rho < 0.5$. In this example, a very low value of ρ implements efficient behavior as a Nash equilibrium.[32] This is due to the cost structure: the dealer's costs were assumed to be nine times as high as the artist's costs. The low share for the artist is not only efficient, but also reflects fairness considerations: the party that has to bear the higher costs, should get the greater share of the output.

4 Risk-averse artists

Until now it was assumed that the actors are risk-neutral. It has been shown in the previous sections that, leaving aside incentive effects, the introduction of a droit de suite tends to harm the artists. If, on the other hand, both sides' efforts to promote the resale value of the work are relevant, a resale royalty can be the incentive compatible contract, as it was shown in section 3.3, and may lead to a higher monetary income for the artist.

The assumption of risk-neutrality will be maintained in this section with respect to the dealer because he is able to spread his risk over a portfolio of different assets. The individual artist, however, relies on only one source of income, especially if he is completely devoted to his work. Therefore, it seems reasonable to assume that artists are risk-averse.[33]

Risk aversion is modeled by a concave utility function. The marginal utility of income is positive (more money brings more utility), but the rate at which an additional unit of income increases the utility is diminishing. There are two reasons why this kind of utility function makes it more likely that a droit de suite is harmful for the artist.

First of all, resale royalties oblige the artist to a lottery that can adversely affect his utility if he is risk averse. It could be beneficial to receive a higher

[32] In fact, four equilibrium constellations are possible, depending on the value of ρ (and neglecting ties):

- $0 < \rho < 0.1$: $f = 0$ is dominant, $e = 0$ is the best reply.
- $0.1 < \rho < 0.5$: Both $e = f = 1$ and $e = f = 0$ are Nash equilibria.
- $0.5 < \rho < 0.9$: $f = 0$ is dominant and $e = 0$ is the best reply.
- $0.9 < \rho < 1$: $e = 0$ and $f = 1$ are dominant strategies.

Note that $0.1 < \rho < 0.5$ implements efficient behavior as one out of two Nash equilibria.

[33] A decision-maker is risk-averse if he prefers not to take part in a "fair" lottery. A lottery is called fair if the ticket price equals the expected gain. Consider a lottery that pays € 100 with probability 0.1 and nothing otherwise. Its expected value hence is € 10. If the lottery is fair, then a risk-neutral decision-maker would be indifferent whether to participate or not. A risk-averse decision maker, on the other hand, would strictly prefer to keep the ticket prize. He would take part if he had to pay less than the expected gain. If the risk-averse is indifferent between the lottery and a ticket price of, say, € 7, then the difference of € 3 is the "risk premium" this decision-maker wants to earn before trading in the ticket prize for the prospect on a uncertain return.

(and secure) initial fixed income rather than a lower one which is combined with a risky payment in the future.[34] If the artist had the right to waive the resale right (and the dealer would agree), the artist could buy himself out of the lottery. However, a waiver is not permitted under the EU directive.

Additionally, if the artist is unable to obtain credit against his claim, the droit de suite shifts income from his youth to his older age. The artist is forced to accept a lower income now, in exchange for some uncertain future gain, shifting income to a perhaps more prosperous stage of his life.[35] This transfer of a part of the artist's current income to the future may be harmful even if the present value of the lifetime income stream is increased.[36]

A numerical example should make clear this *paradox of risk-aversion*: Assume that a young artist has an annual income of € 16.900. The introduction of resale royalties leads to a decrease of, say, € 2.500. His new annual income is then € 14.400. Making use of a concave utility function like $U(x) = \sqrt{x}$, where x is the income and U the utility, the artist gets 130 utility units before, and 120 utility units after the introduction of the droit de suite: thus, the droit de suite leads to a current loss of ten utility units.

Assume now that, in his later life, the artist has an annual income of € 90.000 and the resale royalty brings him an additional income of € 3.025.[37] This is equivalent to 300 utility units without the droit de suite, and 305 utility units after the introduction of it. The introduction brings an additional utility of 5 units. These figures are displayed in table 3, where the label "no dds" stands for the situation without a droit de suite, and "with dds" denotes the situation if a resale royalty is introduced.

Table 3: Lifetime income and utility

	in €		in utility units	
	no dds	with dds	no dds	with dds
young	16.900	14.400	130	120
old	90.000	93.025	300	305
Σ	106.900	107.425	430	425

Adding up the income as well as the utility in the two years under consideration, the artist earns € 106.900 without droit de suite, and € 107.425 if a droit de suite is introduced; hence, the resale royalties increase his monetary income by € 525. However, his lifetime utility is decreased: without droit de suite, overall utility

[34]See Karp/Perloff (1993, 171).
[35]O'Hagan (1998, 89).
[36]This argument was presented in Schmidtchen/Koboldt/Kirstein (1998).
[37]According to Filer (1986), young artists earn less, but show a steeper lifetime income profile than the average workers of the same age.

adds up to 430 utility units, whereas with resale royalties it is only 425 utility units. The utility loss at a younger age due to the introduction of a droit de suite exceeds the utility gain from the resale royalty.

The economic reason for this is straightforward: Having an additional € in a situation where the income is low can bring much more utility than having this additional € in a situation where the income is already high. According to our example, this even holds true when discounting of future income and utility as well as the riskiness of the resale royalty is neglected. If future income were subject to discounting, this effect would be even greater.

5 Conclusion

The aim of this paper was to analyze whether the introduction of a mandatory droit de suite will make artists better off. The answer is, to say the least, unclear. Leaving the effort issue aside and focusing only on the distribution of a given expected return on the resale market, the droit de suite clearly places the artists in a worse position. Taking the incentive effect into account, three cases must be distinguished:

- a resale royalty would be counterproductive if only the dealer's effort is required to promote the value of the artist's work. However, the droit de suite might be at least second-best if the dealer were assumed to be risk-averse, whereas the artist is risk-neutral.
- If, on the other hand, only the artist's effort is relevant to promoting the value of his work, then he should be the residual claimant. The artist should circumvent the dealer and sell his work on his own behalf.
- If both the artist's and the dealer's efforts may increase the expected return in the resale market, then a crop sharing contract can implement efficient behavior.

However, even if a resale royalty forms part of a contract on the initial market, an increase in the artists' lifetime income does not necessarily mean that their position is improved. If they are risk-averse, they are likely to lose. First of all, a droit de suite increases the volatility of their lifetime income. Additionally, the income shift from younger to older age induced by resale royalties can decrease the utility derived from the artist's lifetime income even if the monetary value of his income is higher than without a droit de suite.

Even if a resale royalty were efficient, this would not yet justify a mandatory droit de suite. The artist and the dealer would have an incentive to do this voluntarily. Such a contract may yet be difficult to specify or to enforce.[38]

[38]A very simple way - which is completely free of enforcement costs - for an artist to guarantee participation in the increasing value of his work would be to withhold a few pieces.

Prohibitively high transaction costs are thus a standard rationale for mandatory legislation;[39] in this case the law may sensibly provide a standard contract. If droit de suite is inefficient, but distributes the smaller "cake" in a way that is more favorable for the artists, this might provide another reason for mandatory legislation.

However, there may arise practical difficulties in enforcing the proposed legislation.[40] Dealers may try to circumvent the droit de suite by selling works of art in a jurisdiction where no resale royalties apply. This would prevent the dealer's maximum willingness to pay from decreasing, but nevertheless Europe would lose a share of the art market.[41]

Furthermore, one should carefully determine whether Europe is the optimal legal area for the issue in question. If not, then harmonization itself is not a reasonable goal. Even if one agrees that Europe is the optimal legal area, then the additional question arises towards which direction harmonization should take place.[42] One should keep in mind that the droit de suite provides the greatest losses for the most talented artists. Taking this into account, harmonization should rather be directed towards the abolition of the droit de suite in the countries where it exists than towards the introduction of it in the other countries.

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[39] Karp/Perloff (1993), Hansman/Santilli (1996), and Schmidtchen/Koboldt/Kirstein (1998, 790) also discuss reasons like paternalism or asymmetric information. However, these reasons appear to be less convincing, as long as perfect rationality is assumed. For a general discussion of inalienability, see e.g. Rose-Ackerman (1985).

[40] See O'Hagan (1998, 88f.).

[41] In EU Commission (1999) it is argued that the introduction of a droit de suite would not lead to the loss of "thousands" of jobs.

[42] The EU commision complains that the works of painters like David Hockney enjoy much weaker protection than those of the Spice Girls, see FAZ (1999) and EU Commission (1999). Therefore, harmonization is claimed to be necessary not only among the member states of the EU, but also between groups of artists.

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