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**DOI**

[10.1111/labr.12140](https://doi.org/10.1111/labr.12140)

**Publication date**

2019

**Document Version**

Final published version

**Published in**

Labour: Review of Labour Economics and Industrial Relations

**License**

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[Link to publication](#)

**Citation for published version (APA):**

Hartog, J., & Kackovic, M. (2019). On the Idiosyncrasies of the Labour Market for Visual Artists: Striking features, a formal model, and suggestions for further work. *Labour: Review of Labour Economics and Industrial Relations*, 33(2), 162-186.

<https://doi.org/10.1111/labr.12140>

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# On the Idiosyncrasies of the Labour Market for Visual Artists

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*Striking features, a formal model, and suggestions for further work*

**Joop Hartog — Monika Kackovic**

*Abstract.* Labour markets for visual artists active on the primary art market are characterized by the oversupply of producers, strong product heterogeneity, elusive buyer tastes, and highly uncertain incomes. Self-employment is the rule, and often, in combination with other (non)art-related work. First, we describe these features and provide empirical evidence for the Netherlands. Second, we build an analytical model by adjusting the standard model of labour supply to allow for these features. Third, we provide further suggestions for empirical work focusing on career dynamics in markets with extreme uncertainty.

*When I organised music performances in 1969, 30 people would show up. They were all my friends. A few years later you play in enormous concert halls. I anticipated that I would have odd jobs all my life. Only when I was 42, my music generated a living. I always kept all my diploma's and certificates just in case I would need them again.*

Globally acclaimed composer Philip Glass at 80, *NRC Handelsblad*, C3, 05-12-2016

## 1. Introduction

We know that a labour market is not a flower auction and that competitive labour markets are exceptional.<sup>1</sup> Yet even among the array of non-competitive structures that motivated the emergence of modern labour economics, the creative industries — and especially the primary market<sup>2</sup> for visual artists — stand out as being unique. In this paper, we will document these singular features and develop a formal model that describes them.

Many producers in the creative industries have employment contracts; nevertheless, there are remarkable differences among the disciplines. The interesting feature is the variation in institutional structures; the 'industrial organization' of the creative occupations is very diverse and actually spans a continuum, from the violinist in a symphony orchestra with a tenured full-time employment contract to the autonomous painter who works as a full-time entrepreneur.<sup>3</sup>

In this paper, we focus on the visual artist who is motivated by the desire to produce autonomous work and who must find ways to make this economically viable.<sup>4</sup> The artist may (try to) sell directly to a buyer or through galleries but essentially the labour market (the supply of artists) and the product market (the supply of art works) are directly

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We gratefully acknowledge comments by Michael Sattinger, Pedro Raposo and Hans van Ophem and by two anonymous referees.

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LABOUR 33 (2) 162–186 (2019)

DOI: 10.1111/labr.12140

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connected, through the artist. Income from sales may be too low, forcing the artist to find other sources of income. With the instability and unpredictability of sales, the decision on labour supply is unlikely to be a once-and-for-all decision. The question then arises: how long can independence be maintained? Put differently, when is an employment contract outside of the arts given up to focus on full-time artistic entrepreneurship?

Cultural economics that emerged in recent decades has a broad stream of literature on labour markets. The edited volume by Frey and Pommerehne (1989) surveys cultural economics in its early stages. The editors themselves contribute a chapter on artists' income, with empirical evidence on several countries.<sup>5</sup> Throsby (1994) discusses the nature of cultural economics as a subdiscipline, essentially arguing that in spite of all kinds of (romantic) myths, output, and labour markets for the arts can be fruitfully analysed with the common tools of economic analysis. Menger (1999) surveys the sociological and economic literature on artist's labour markets, combining assessment of theoretical analysis and formal modelling with reference to empirical evidence on the US, UK, Australia, and France. In fact, quite a few descriptions of the nature of artist labour markets exist (see e.g. Menger, 2001 and Menger, 2015), but hardly any formal models (except for Throsby, 1994bis). Some studies present regression results for labour supply and earnings to isolate conditional effects (such as Throsby (1992) for Australia and Filer (1986) for the US), whereas many other studies just present cross-tables with descriptive information. In this paper, we will refer to the international literature as the background of our contribution, but we do not aim for a full survey of the literature.

Rather our focus is on understanding the idiosyncrasies of the market for visual arts using empirical evidence from the Netherlands and identifying lacunae of statistical information about this market.<sup>6</sup> Our discussion and documentation of peculiarities of the artist labour market indicate the conditions that should be represented in a formal model, which can serve to analyse this market more precisely (e.g. for policy questions) and can guide future empirical work towards estimating key parameters. While there are many descriptions and non-formalized analyses of the art market, there are only a few formal models that have been used for econometric estimates. In our model, we address these challenging and dramatic aspects.

In Section 2, the peculiar features of the market for visual arts and artists will be listed. We document these features with data on the Netherlands, from the Central Bureau of Statistics and other Dutch sources. This shows how the general features that characterize markets for visual artists, as indicated in the international literature, manifest themselves in more precise quantitative form in the Netherlands. Mostly, the results fit in with this literature, but income and wealth distributions are not fully in line with the common picture. We argue that the standard labour supply market model with an interior solution for hours worked is not the most relevant, as corner solutions of sorts dominate. Hence, we develop a specific model that acknowledges these features in Section 3 and in Section 4 we extend the model to include two periods. These models are basic with options for analytical extensions and implications for relevant empirical work, and in that sense, constitute a plan for further research, presented in Section 5.

## 2. Peculiar features

As noted, we focus on formal modelling to gain a finer grained theoretical understanding of the situation of self-employed individuals who are engaged in careers in uncertain

and dynamic markets, such as the primary market for visual arts. The peculiar market features we discuss in this section are well established in the cultural economic literature.<sup>7</sup> However, they have been applied broadly to various creative industries and we cannot always isolate the empirical evidence to relate only to visual arts. In addition to formal modelling, we document the primary visual art market features with evidence for the Netherlands. Empirical evidence on the situation in the Netherlands is fragmentary and imprecise. Vinken (2016) is a valuable survey and assessment of empirical evidence, culminating in a listing of desirable additional data collection. The Central Bureau of Statistics (CBS) provides the most systematic and representative evidence on work and income of visual artists in the Netherlands.

### 2.1. *Extreme product heterogeneity*

Throsby (1994, p. 4) refers to a work of art as ‘an extreme case of a heterogeneous commodity’ where ‘every unit of output is differentiated from every other unit of output’. In addition, the quality of these heterogeneous products cannot be measured objectively in the way, for example, the quality of an automobile is measured by its durability, speed of acceleration, size, etc. In this market, there is no unambiguous definition of quality and heterogeneity cannot be reduced to a few dimensions. This is because quality — particularly on the primary art market where, as mentioned earlier, artworks are sold for the first time — is a subjective concept that mostly reflects a buyer’s taste. This problem — also present in the secondary or art auction market — has been clearly illustrated in the hedonic price equations estimated by Frey and Pommerehne (1989): among the variables used to explain prices, there are only two intrinsic attributes<sup>8</sup> of the artwork: ‘expensive materials’ and ‘large size’. The hedonic price equation estimated by Rengers (2002) contains no intrinsic qualities of the artwork at all, although Renneboog and Spaenjers (2013) take artistic reputation into account. Neither can quality be related to cost of production: a beautiful painting is not costlier to produce than an ugly painting. In view of the extant literature, we will abstain from the concept of quality in modelling the artistic labour market.

The absence of product homogeneity rules out the emergence of equilibrium price through competition. Without competition that drives prices down to production cost, the scope for monopolistic rents is tremendous. Reder (1969) discusses the case where ‘a suitable general purpose scale for measuring value differences in heterogeneous economic goods’ is not available (o.c. 215–219). He notes that if all buyers have identical tastes, product prices (for paintings, sculptures, etc.) will reflect the unique preference ranking and that the magnitude of the price differentials will reflect the income and wealth distribution among buyers. Hence, inter-rank differences in artist earnings will increase with the mean and variance of buyer incomes. By contrast, if buyer preferences differ widely, prices for art products, and artist earnings may well be equal. Note that product heterogeneity does not rule out price competition among products, product types, and artists as art collectors have a wide variety of choices.<sup>9</sup>

### 2.2. *Tastes are very heterogeneous*

Some people have a strong and highly individual taste for art. But many people have no robust taste of their own (as they would have for types of food, holiday destinations, work, or leisure activities such as sports) and the ones they may have are often formed through

strong social influences Salganik and Watts, 2009; Salganik *et al.*, 2006). Taste leadership, by art ‘experts’, exists and tastes are very malleable and volatile over time. Taste for art at all, or for particular types of art can generate social prestige, and function as a signal for lifestyle. In that sense, art can function as Veblenesque conspicuous consumption.<sup>10</sup> Many other types of goods can play this signalling role, as for example wines, cars or holiday destinations. But as noted above, art has no intrinsic objectively measurable qualities such as cars have (size, durability, acceleration speed, etc.), and wines, as the ‘taste’ of the wine can be chemically characterized). In fact, it is often observed that in the art market there is antagonism between commercial and artistic valuation. The notion of commercial success as a negative signal of quality can only exist because objective standards for evaluating quality are lacking in arts like painting, poetry, music. Perhaps, the required technical skill of producing an artwork may give some hedonic basis to pricing, just as the size of the art work and the materials used, but this seems unlikely to have an overriding impact. This means that the combination of product heterogeneity, taste heterogeneity, and taste fuzziness dramatically increases the scope for monopolistic rents.

An interesting and telling illustration of the fuzziness of aesthetic quality and heterogeneity of taste (or quality perceptions) is given in an experiment by the Internet media channel LifeHunters.<sup>11</sup> They placed a \$10 IKEA print in the Museum of Modern Art in Arnhem, the Netherlands, and asked museum visitors what they thought about it. ‘You don’t buy this in a cheap store’, one woman says. Another man says he would pay €2.5 million or \$2.7 million, if he were given the opportunity to buy it. Though, ‘If it’s more, I’d think it’s too pricey’, he says.

### 2.3. Labour is the dominant production factor

Brouwer and Zijderveld (2003) give detailed information on the financial position of visual artists. Unfortunately, their sample is not representative as it draws on artists who have been subject to a government instrument of art policy (applicant or recipient of a subsidy, seller of art work to a government agency). Nevertheless, for the visual artists in the sample, average expenditures in 2001 were 12,500 euros: material inputs 4,000, housing 2,000, capital depreciation 1,000, selling and exposition cost 2,000, other professional cost 3,500 (o.c., Table 2/9). Average earnings from artwork are 37,500: subsidies 6,000, teaching 4,500, consulting 2,000, art sales 23,000 (o.c. Table 2/7). Allocating all cost to artwork yields value added in the market of 37,500 minus 9,500 (material input, sales cost and other cost) equals 28,000, implying a capital share of  $3,000/28,000 = 11$  per cent.

For visual artists, gross annual income including subsidies, net of professional expenditures, is 25,000 euros; for all working persons this is 34,000, for all persons working at higher occupational level, this is 52,000 (calculated from CBS 2011, Table A7). Valuing artists’ labour at the price of their best alternative would reduce the capital share even further.

### 2.4. Artists have an unusual drive to work as an artist

Many artists often do not earn the social minimum, and depend on secondary part-time jobs, social benefits, family support, and/or live in poverty. However, artists generally have a high urge to produce their individual artworks, to be creative; in other words, they have strong non-pecuniary preferences and forego higher earnings opportunities.<sup>12</sup> The

monopolistic rents discussed above may well be negative in the sense of sales value below the social minimum, or below alternative employment.

The importance of non-pecuniary motives is illustrated by results from a questionnaire cited by Vinken (2016, p. 29; KWINK Groep, 2014: 79): ‘When you have reached the summit’ is one of the questions.<sup>13</sup> Half of the respondents indicate that this is the case if your work is exposed at an international level, half thinks this is so if your work is exposed at a prominent place (museum, gallery, television). Four out of 10 answers that reaching the summit means that you can live from selling your art. Far less important are recognition by others or through prizes and grants, having your own admirers or solo-expositions. In other words, artistic success is a dominant yardstick, and to the extent that earnings count, it means having sufficient income from artwork to allow artistic autonomy.

### 2.5. *Artists are self-employed*

As mentioned, our focus is on artists who want to make ‘autonomous work’. This is art that is created based on the artist’s inspiration, which almost by definition requires an independent position in the workplace. Vinken (2016, p. 33) notes, from CBS (2014), that 90 to 95 per cent of visual artists are self-employed in their primary position.<sup>14</sup> While self-employment may be taken as a defining characteristic, the combination of artistic entrepreneurship with other employment, such as part-time jobs, is equally characteristic.

### 2.6. *Demand for artworks operates on a primary and a secondary market*

In the primary market, art is bought directly from the artist, possibly mediated by a gallery, in the secondary market art is resold at auctions. Buyers can be ‘occasional’ individual buyers, private and corporate collectors, and museums. In a very general sense, the secondary market<sup>15</sup> gives an indication of an artist’s (future) position in the canon of art history,<sup>16</sup> whereas the primary market<sup>17</sup> is where preferences for particular artists are, for a large part, determined.

Galleries are agencies that help reduce search cost in an otherwise very non-transparent market but also function as ‘taste makers’ in the primary art market and in that sense are marketing agencies for artists. Less than 20 per cent of the galleries have contracts with visual artists (van der Valk, 2014; Table 18).<sup>18</sup> As intermediaries, galleries have a price: galleries typically pass on 40 to 60 per cent of the proceeds to the artist (see Appendix A Table A1 for details).<sup>19</sup> This is a very high charge, much higher than for other intermediaries. For instance, real estate agents charge a few per cent, recruiters<sup>20</sup> for specialists and middle management typically charge 15–20 per cent of the annual salary, increasing to 25–33 per cent for executive search (with a nominal cap), football (soccer) agents used to charge 10 per cent (hence their nick name ‘Mr 10%’), but with increased competition this has dropped to some 5 per cent. This points to a very high risk of the search or matching process, i.e. to a very intransparent market.

### 2.7. *The connection between arts education and artist as an occupation is weak*

Many artists have no formal arts education; many arts graduates do not work as an artist.<sup>21</sup> Taking art classes or even an art education is not always aimed at a well-defined professional life as an artist, and may well be taken as preparation for leisure activity. The

economic prospects for artists are highly uncertain, and students may take just a few art classes or art as only a minor.

CBS (2014) defines artists in a labour force survey as those respondents who select one of a limited number of specified artistic occupations and defines arts graduates as registered graduates from a specified set of arts educations (mostly art schools at tertiary levels, known in the Netherlands as HBOs<sup>22</sup>). By those definitions, in 2011 there were 119,000 artists in the Netherlands, of whom 40 per cent did not have formal art education. There were 232,000 persons in the labour force with an artistic education (excluding teacher training), of which only a quarter is active as an artist.

Among the 119,000 artists, there are 15,000 visual artists, 65,000 designers, 29,000 performers, and 10,000 authors, translators, and others.

### 2.8. Full-time dedication to autonomous art is not the rule

Artists, in the CBS definition, often have more than one labour market position (e.g. employee, self-employed, and/or two or more jobs). In 2011, 7 per cent of the labour force has more than one position; for artists this is 17 per cent, for visual artists just over 20 per cent (CBS, 2014, Table 4.3.1, p. 31).

The mixed labour market position of artists is also visible in data extracted by ROA<sup>23</sup> from their labour market monitor. In the recent decade, just over 40 per cent of graduates from a visual arts education only work in an occupation related to their education, some 40 per cent work both in occupations within and outside their field of training and some 15 per cent work in occupations unrelated to their education, just after labour market entry (18 months after graduation; Vinken, 2016, figure 5).

van Winkel *et al.* (2012) interview alumni of five art schools (HBO) in the Dutch province of Brabant and the Belgian province of Vlaanderen, all graduated as visual artists, in 1975, 1990, or 2005. Unfortunately, the data are not distinguished by cohort, thus hiding important dynamics of career development. About a third of working time is spent working as an artist, whereas some 40 per cent is spent on work not related to art (Appendix A Table A2).

van Winkel *et al.* (2012, p. 60 ff, 87) also report that 21 per cent of their sample of visual artists work in what they call a 'hybrid art practice', creating autonomous artworks and applied work without strict separation, whereas 28 per cent work in a pluri-active practice (autonomous and applied, strictly separated) and 8 per cent produces only autonomous artworks. The other 43 per cent do not work as visual artists, although half engage in art-related work.

### 2.9. Artists have comparatively low mean income, high dispersion, and high skew

In the international literature, the common view is that artists have low incomes, with high inequality and strong negative skew (or asymmetry), whereby the lower tail of the distribution is much fatter than the upper tail, and only few artists have high incomes.

CBS (2011) documents the labour market position for artists in the Netherlands, using both a definition based on occupation and a definition based on education.<sup>24</sup> CBS data have, on the one hand, an advantage over smaller ad hoc surveys in specific studies as being more representative, having less non-response and higher reliability as they are based on administrative data. On the other hand, the scope for underreporting of income and wealth may be larger because of the informal character of some work relationships. The occupation-based

documentation distinguishes artists and persons working in other creative occupations. The group of artists covers 19 occupations.<sup>25</sup> In 2004–2006, there are 117,000 artists: 29,000 visual artists, 48,000 designers, 20,000 performers, and 20,000 writers and translators. The 186,000 persons in other creative occupations divide over 78,000 tertiary job levels and 108,000 lower and secondary job levels (CBS, 2011 Table A1b, p. 65).

Appendix A Table A3 collects data extracted from CBS (2011), based on data from the Enquete Beroepsbevolking (Labour Force Survey) and administrative data on taxes and social security. Artists more often receive a social security transfer than an average person in the labour force and also more often than an average person in another creative occupation (12, versus 5 and 5 per cent). Although artists often have a second job, they are primarily self-employed and often work most hours in that capacity. Individual income for the artist is lower than for the average person or for someone in another creative occupation (25 per cent of the artists earn less than 10,000 euros gross per year, compared with 16 and 15 per cent for the alternatives) and standardized disposable household income is also lower (12 per cent earn below 10,000, compared with 5 and 6 per cent for the alternatives). But the difference in wealth distribution is quite modest, if not negligible. An explanation might be that wealth largely reflects housing wealth and that artists also have benefitted from the boom in the housing market.

The education-based documentation presents panel data for several cohorts of graduates from art schools<sup>26</sup> (Appendix A Table A4 presents some key statistics). Features discussed earlier appear more pronounced: artists are more often self-employed, more often receive social benefit (welfare, a transfer for artists, unemployment, disability), have lower individual income and lower household wealth. The wealth gap is more pronounced here than among artists defined by occupation. This may be a selection effect: an occupation can be changed in response to outcomes, an education cannot. Self-employment increases with experience (i.e. between cohorts), but less monotonic for creative than for non-creative educations.

From CBS data, we can calculate income statistics (Appendix A Table A5a). Defining artists by their education, cohorts by their year of graduation, and measuring income and wealth in 2007, visual artists have about the same mean personal income as all graduates with a creative tertiary (HBO) education, but creative graduates have substantially lower mean personal income than non-creative graduates.<sup>27</sup> In each cohort, creative graduates earn slightly more than half the income of non-creative graduates; the stability across cohort is interesting, apparently, there is neither selective switching of artists towards better paying positions, nor gradual falling behind over the life cycle. Contrary to common wisdom, the dispersion is smaller among artists than among non-artists. Standard deviations among visual artists are about equal to standard deviations among all creative graduates, and substantially lower than among non-creative HBO graduates. The same holds in relative terms, for the coefficient of variation. For skew, we find the same ranking as for mean and dispersion: the distributions have substantial negative skew, with a concentration of probability mass at the lower incomes. In the distribution of household wealth, we find the same situation for mean and standard deviation: about equal for visual and all creative educations, substantially lower than for non-creative graduates. But for skew, now positive instead of negative, the situation is different: among the youngest cohort, the skew is higher for artists, but the gap declines, and among the oldest cohort it has vanished.

Central Bureau of Statistics also provides information for artists defined by their self-reported occupation, in contrast to the educational definition a status that is endogenous to labour market experiences (Appendix A Table A5b). Income distributions for artists and



other creative occupations are not very different from the distribution for the entire labour force. In 2004–2006, mean personal annual income for artists is 12 per cent lower than for all active persons, in 2007–2009 it is only 6 per cent lower. Differences in disposable household income are even smaller. Artists as defined by self-reported occupation have distributions of gross personal and disposable household incomes that are very similar to those of the entire labour force. In combination with the data for persons with the same level of education discussed above (Appendix A Table A5a), the results indicate that artists have a low rate of return to education. In terms of household wealth, however, artists are better off than the average labour market participant. Perhaps the most remarkable finding is, that in contrast to the *communis opinio*, the dispersion of artist incomes is not large: it is markedly smaller than for persons with the same level of education.

To sum up the income and wealth situation in the Netherlands: among individuals with the same level of education (*HBO*, tertiary professional), artists have lower mean personal income with smaller standard deviation and smaller absolute skew (which itself is negative) and lower mean household wealth with smaller standard deviation and higher (positive) skew compared with graduates from non-creative training. Defining artists by occupation, the income situation (gross personal and disposable household) among artists, and other creative occupations is barely different, whereas the household wealth distribution for artists has lower mean, lower standard deviation, and higher skew. These results are not fully in accordance with the standard perception of low mean and high inequality in the financial position of artists.

### 2.10. Dynamics (*earnings, exits, etc.*)

As stated by Anne Rodermond, a visual artist who graduated from the Rietveld Academy in *NRC Handelsblad* (17-11-16, p. C5) concerning giving up work as self-employed artist, ‘With all stubbornness you try to stick to your convictions. That was my reality. But that was not the reality of society. I could not go on like that. So, I said farewell to what was dearest to me’.

The dynamics of time allocation between art work and other work and of earnings and income no doubt will be highly selective, responding to the extent of realized artistic success as the career develops. Cross-section data by age may suggest the nature and magnitude of the (self-) selection process, but the best source will be panel data.<sup>28</sup> It is also panel data that should document the often-stated volatility of earnings and income. But such documentation is mostly absent for the Netherlands.

van Winkel *et al.* (2012) give some illustrative evidence on career dynamics, from interviews with alumni of five art schools (*HBO*) in Brabant and Vlaanderen, all graduated as visual artists, in 1975, 1990, or 2005. Unfortunately, the sample sizes are rather small, 51, 96, and 68, respectively. In the year of observation (2010), the youngest cohort earns 21 per cent of its income from artistic work, the middle 17 per cent, and the oldest 36 per cent (o.c. Table 3.49). That indicates that it takes time to build up an artistic career, and that the early years may be seen as investment years. The share of respondents that call their career unstable decreases, from 31 through 27 to 15 per cent: instability appears an early career phenomenon, which is neither surprising nor unique to artists. But the percentage calling it stable is not the simple complement, at values of 29, 57, and 30 per cent, with the remainder at 8, 12, and 5 per cent calling the experience ‘other’. (o.c. Table 3.51). Having reached the goals set at the time of graduation, or not, shows a nice monotonic pattern. The percentage saying yes increases (15, 20, 32 per cent), the percentage saying no

decreases (27, 24, 14 per cent) and the share responding ‘to some extent’, is stable around 55 per cent (o.c. Table 3.47). Thus, only one-third of the oldest cohort, with some 35 years of experience claims realization of their goals; but whether this is really low could only be assessed if it would also be known for the population at large.

One hundred and two respondents state their reason for giving up work as an artist (o.c. Table 3.29), which is 26 per cent of the total number of respondents.<sup>29</sup> If we lump together economic reasons, such as not being able to make ends meet, lack of talent, and resenting the artworld for lack of success, 53 per cent or half of the quitters would do so for this reason. The other half for the other reasons, such as: starting a family, being sick or disabled, lack of motivation, changed preferences, burn-out, and other. But one could easily defend including some of the other reasons among lack of success, making a failure rate of half the quitters a lower bound. Actually, a quit rate of 26 per cent of the graduates seems remarkably low and probably indicates selective response.

Data on graduates from the Rietveld Academie, an art school in Amsterdam, give some information on the dynamics of income between cohorts (Appendix A Table A6). In total, 276 graduates responded, 261 were still active in art (either as an artist or in the art field) and only 14 had switched to other work at some point in the past. This can only indicate that among switchers non-response was very high. The survey gives the income distribution in 2011 by year of graduation, for graduates still active as artists. Cohort sizes are small, so the distributions fluctuate from sampling variation, but the most remarkable result is the absence of clear trends across cohorts. At best, the share of annual incomes below 10,000 euros drops a bit as cohorts age, but otherwise the distributions are fairly stable over time.

### 3. Formal modelling

What makes the labour market for visual artists so special is the combination of the features. There are many educations where the link with profession is weak, for instance scientists, lawyers, and engineers may work as managers, or a trained carpenter may end up as a truck driver. High labour intensity also holds for a sales worker. A preacher and a researcher also have a strong dedication to their vocation. The owner of a beach restaurant also has a highly uncertain income. It is probably the product heterogeneity, the elusive nature of tastes, and the strong drive of artists that make up the essence of the uniqueness of the market for visual artists, with earnings uncertainty and hazardous market participation as consequences. The special features create a challenge for analytical modelling and for empirical work, and a need for more and better data.

The features outlined above can be taken as the description of a market structure. Visual art is produced with a production function that is highly labour intensive (feature 1). Suppliers are producers with an exceptionally strong taste for this vocation (2), who make highly idiosyncratic products (3) and hence have a strong urge for autonomy (4). The demand side is characterized by highly heterogeneous tastes and very dispersed market participation across the population (5). Artistic and commercial success are highly unequally distributed (6), only few artists have their work sold on auctions (7) and this uncertainty and inequality, jointly with the heterogeneity on both sides of the market prevent a strong tie between education and occupation (8) and preclude full-time dedication to art work for many artists (9). Uncertainty of commercial success also leads to particular dynamics in the attachment to the world of art (10).

Formal modelling of this peculiar labour market barely exists. We can do so by adjusting the model of labour economics to our needs. The basic model of labour supply has a given wage rate and an individual deciding on hours worked as the utility maximizing combination of consumption and leisure. A strong urge to be active as an autonomous artist may be represented in the utility function as time spent on art work and a change of the choice problem to optimum combination of consumption and time spent in autonomous art work, with a budget constraint in non-labour income, proceeds from selling art work and wage earnings from work as an employee. Wage earnings are needed to finance consumption if non-labour income and proceeds from selling art work are not sufficient. This is the model first presented by Throsby (1994bis) and recently estimated by Casacuberta and Gandelman (2012) for Peruvian musicians and by Bille *et al.* (2017) for Norwegian artists. We have constructed (independently) a similar model as our basic tool.

We represent the intransparency of the market conditions facing the artist (lack of unambiguous quality standards, extreme product heterogeneity, and unpredictable heterogeneous tastes) by stochastic returns from artistic work. An artist does not produce standardized products for a given price or can count on a given hourly wage for artistic work, but faces a probability distribution of returns.<sup>30</sup> Uncertainty is a vital element in his economic environment.

To allow for analysis of career dynamics, we present a two-period specification of our model. We can then analyse possible mid-career switches, like entering or leaving the artist labour market, or adjusting hours worked as an artist. We consider the dynamics in the opportunity to spend time on autonomous art work, in combination with uncertainty in pay-offs, as the most challenging characteristic for analysis of the artistic labour market. Confronted with the strong urge for autonomous art work, it also has the largest scope for drama (see feature 10 in Section 2). Waits and McNertney (1984) have developed a lifetime model for labour supply as an artist where instant utility depends on consumption and leisure time, and where utility for work as an artist is only represented as the utility from an artistic legacy, in a world without uncertainty. The analysis specifies (first-order) conditions for choosing either an artistic or a non-artistic career and does not allow for career switches.

We will analyse the supply decision of a visual artist in steps of increasing complexity. We will first develop a core model for a single period with no uncertainty on earnings as an artist, then introduce earnings uncertainty and finally construct a two-period model to allow for possible mid-career switches. We consider an artist who divides his (her) time between working as an artist and taking on some other job. Leisure is ignored, the fraction of time working as an artist is  $h$  and hence, the fraction spent in the other job is  $(1-h)$ . Earnings as an artist are denoted  $w^a$ , earnings in the non-artistic business as  $w^n$ . To represent the typical preference structure of an artist as identified above, we assume utility to depend only on time spent working as an artist and on consumption. Non-artistic work generates no utility, it only serves to finance consumption.<sup>31</sup> The artist requires a minimum consumption level to survive,  $C^{\min}$ , only consumption above this level contributes to utility. The utility function is

$$U = U(C, h) = U(C^* - C^{\min}, h)$$

with, conventionally, positive first and negative second derivatives and where  $C^*$  measures total consumption and  $C$  measures consumption in excess of minimum consumption. The budget constraint is

$$C^* = hw^a + (1 - h)w^n + Z$$

or

$$C = hw^a + (1 - h)w^n + Z - C^{\min}$$

Where  $Z$  is other, non-labour, income (partner income, social benefit, income from wealth).<sup>32</sup> By substitution, we have a simple maximization problem: the artist chooses  $h$  to maximize

$$U(hw^a + (1 - h)w^n + Z - C^{\min}, h)$$

With a standard equilibrium condition in case of an interior solution:

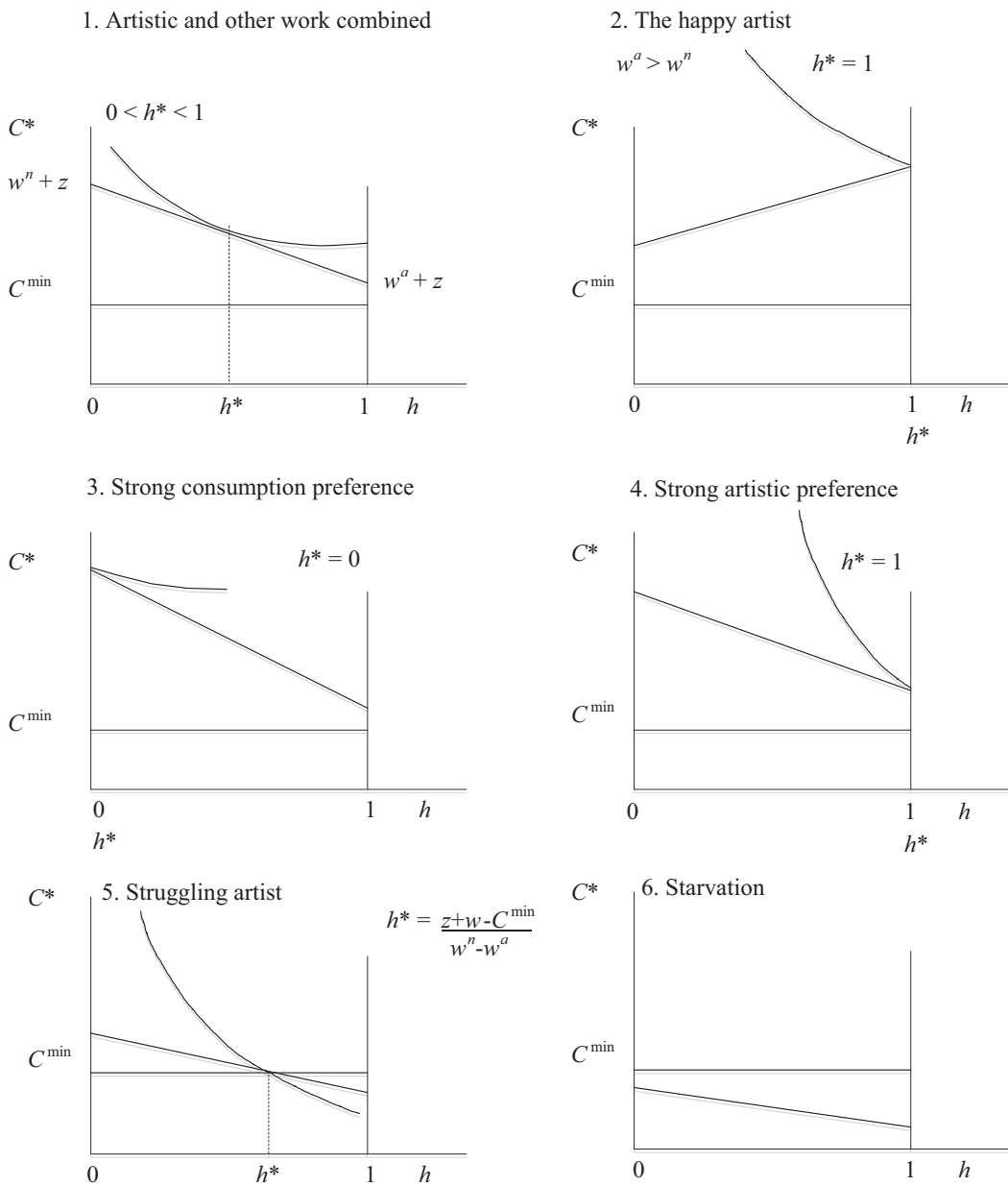
$$w^n - w^a = \frac{\partial U / \partial h}{\partial U / \partial C} \quad (1)$$

Analytically, this model is equivalent to the standard consumption-leisure model for labour supply, with working as an artist taking the role of leisure, but now with leisure generating income ('a paid hobby'), and with the opportunity cost of 'leisure' (working as an artist) equal to the wage loss relative to 'other work'.

However, we cannot take the interior solution for granted and in fact, the attraction of the model is the possibility to allow for corner solutions. In Figure 1, the first drawing shows an interior solution with time divided between artistic and non-artistic work to obtain a living standard above the bare minimum. The budget line is downward sloping from  $w^n + Z$  to  $w^a + Z$ , and hence, has slope  $w^a - w^n$ . The graph shows how much income (consumption) the artist gives up to be able to do artistic work. At the extreme, in drawing 5, we see the struggling artist who gives up all consumption above the minimum and only performs non-artistic work to survive: the unconstrained solution would be full specialization in artistic work. Drawing 2 shows the happy artist with  $w^a > w^n$ , and obviously, full specialization as an artist. Drawing 3 shows the corner solution for an artist with a strong taste for consumption, Drawing 4 for the case of strong preference for artistic work. Drawing 6 is the sad case where no combination of artistic and non-artistic work yields the minimum living standard.

The graphic analysis points to the parameters that govern the outcome, i.e. the determinants of the indifference curves and the budgetline.<sup>33</sup> The slope of the indifference curve, the marginal rate of substitution, indicates how much consumption an artist is willing to give up to spend more time on his artistic work. With increasing level of time spent artistically (increasing level of  $h$ ), one may assume the marginal sacrifice of consumption to decrease, so that indifference curves will bottom out. But in general, relative to supply of common labour, one may assume that artists are willing to forgo much consumption for more artistic time, and hence that indifference curves will be fairly steep. This pushes the equilibrium to the right. Drawings 4 and 5 probably represent the most common situation: the artist would prefer the corner solution in 4, and only, as in drawing 5, accepts a lower level of  $h$  if that is necessary to earn his minimum standard of living.

**Figure 1.** Outcomes of the core single period model



From the graphs we can infer what would push  $h$  to higher levels for a given individual: an increase in non-labour income  $Z$  (as we may assume positive income effect), a flatter budget line (higher  $w^a$  or lower  $w^n$ ) as we expect that for artists the positive substitution effect dominates the negative income effect, and a decrease in the minimum consumption level (from lower likelihood of a constrained solution). These effects may also be predicted

across individuals. On top of that there may be heterogeneity in preferences: individuals with higher marginal rates of substitution (steeper indifference curves) will have higher levels of  $h$ . By focussing on the neighbourhood of equilibrium around  $h = 0$ , we can predict the likelihood of giving up artistic work: this will become likely after a fall in  $w^a$ , and increase in  $w^n$ , a decrease in  $Z$  and an increase in  $C^{\min}$ .

## 4. Two-period model

### 4.1. Uncertainty

As illustrated above, earnings as an artist are highly unpredictable. We will model uncertainty by specifying the wage rate  $w^a$  as a draw from a positively skewed distribution  $f(w^a)$  with positive third moment or skew. As motivated above, we will not relate wages to aesthetic quality, as we believe this would unnecessarily complicate the analysis with profound measurement problems.<sup>34</sup> We assume that the labour supply decision has to be made before the draw of the wage rate is known, and holds for the entire period. This reflects that the labour supply decision is not made on a day-to-day basis, but typically applies to a longer period of time.

As noted, the artist faces a wage distribution  $f(w^a)$ , with known parameters

$$E(w^a) = \mu; E(w^a - \mu)^2 = \sigma^2; E(w^a - \mu)^3 = \kappa^3 \quad (2)$$

Applying expected utility theory, we now assume that the artist will choose artistic time to maximize expected utility:

$$\text{Max!}E(U) = E[U\{hw^a + (1 - h)w^n + Z, h\}]$$

Minimum consumption  $C^{\min}$  has been ignored for simplicity, but can be taken as subsumed in  $Z$ . Applying a Taylor expansion around the mean arts wage up to the third moment, and setting the derivative equal to 0, we can derive the equilibrium condition (see Appendix B):

$$w^n - \mu = \frac{\partial U/\partial h}{\partial U/\partial C} \left\{ 1 + \frac{1}{2} \frac{\partial^3 U}{\partial C^2/\partial h} \frac{1}{\partial U/\partial h} \sigma^2 + \frac{1}{6} \frac{\partial^4 U}{\partial C^3/\partial h} \frac{1}{\partial U/\partial h} \kappa^3 \right\} \quad (3)$$

Comparing equilibrium conditions [1] and [3], we see that the effect of uncertainty depends on the sensitivity of the second and third derivative of utility to consumption to increases in artistic time. If they are both zero, only the mean of the artistic wage is relevant. If the sensitivity of the second derivative is negative, equilibrium requires a higher marginal rate of substitution, and  $h$  has to be reduced: risk reduces the time spent as an artist. If the sensitivity of the third derivative is positive, equilibrium is located at lower marginal rate of substitution: skew increases the time spent as an artist. With these signs, we have the conventional anticipated effects: risk puts people off, skew attracts them. Note that by collecting terms on  $\sigma^2$  and slightly rearranging, the coefficient is almost identical<sup>35</sup> to the elasticity of the Arrow–Pratt measure of risk aversion to art hours  $h$ .

As an example, consider the common Cobb–Douglas utility function

$$U = \{hw^a + (1 - h)w^n + Z\}^\alpha h^{1-\alpha} \tag{4}$$

With the Taylor expansion, this would yield the following equilibrium condition (see Appendix B):

$$w^n - \mu = \frac{\partial U / \partial h}{\partial U / \partial C} \left\{ 1 + \frac{1}{2} \alpha (\alpha - 1) \frac{\sigma^2}{C^2} + \frac{1}{6} \alpha (\alpha - 1) (\alpha - 2) \frac{\kappa^3}{C^3} \right\} \tag{5}$$

In this example, we see that indeed the variance has a negative effect and the skew has a positive effect on the right-hand side. But, of course, tastes for risk and skew may differ, certainly for artists. We conclude that we can simply superimpose the effects of wage uncertainty on the earlier predictions. We can allow for uncertainty by considering the supply response to variance and skew in the artist wage distribution. With conventional taste (risk aversion and skew affection) higher variance will reduce time spent on art, higher skew will increase it. But as there may be risk lovers and skew haters, the predicted sign will be reversed for such individuals.<sup>36</sup>

#### 4.2. A two-period model

We now assume that working life has two periods, denoted by subscripts 1 and 2, with the possibility of changing status between periods. We will assume that the individual can save in the first period and use this wealth in the second period to finance artistic freedom.<sup>37</sup> We will analyse this case by backward induction: first solve for labour supply in the second period given the level of savings carried over from the first period and then solve for first period labour supply and savings under maximization of lifetime (expected) utility. We will start under the assumption of non-stochastic wage.

Compared with the core model, there is only one modification in the second period: ‘other, non-labour income’ has the additional component of savings  $S_1$  (including accumulated interest). Thus, we now have to choose  $h_2$  to maximize

$$U(h_2 w_2^a + (1 - h_2) w_2^n + Z_2 + S_1 - C_2^{\min}, h_2)$$

The equilibrium condition in case of unconstrained solution is the same as before

$$W_2^n - W_2^a = \frac{\partial U / \partial h_2}{\partial U / \partial C_2} \tag{6}$$

The set of possible constrained and corner solutions is also identical to that in the core model, with savings  $S_1$  playing the same role as non-labour income  $Z$ . We can now define the indirect utility function  $V$  that relates maximum attainable utility to the exogenous variables:

$$V_2 = U_2^{\max} = V(w_2^n - w_2^a, Z_2 + S_1 - C_2^{\min}) \tag{7}$$

Standard assumptions guarantee that the derivative of  $V$  to savings is positive for an interior solution and non-negative for corner solutions (the constraint may remain binding

at higher level of savings, i.e.  $h_2$  may remain 0 or 1). With binding minimum consumption,  $V$  will increase with increasing level of savings. The effects can be simply read off from shifting the budget line in Figure 1. With artistic time a normal good (positive income effect), it is also straightforward to infer the effects on artistic time  $h_2$ : positive for an interior solution (Drawing 1) and a binding consumption constraint (Drawing 5), zero if  $h_2$  would be 1 before the increase in savings (Drawings 2 and 4) and non-negative for a corner solution at  $h_2 = 0$  before the change in savings (Drawings 3 and 6).

With savings, the link between period 1 and period 2, we can now analyse the initial decisions. At the beginning of period 1, the individual maximizes lifetime utility with respect to  $h_1$  and  $S_1$ :

$$\max U\{h_1 w_1^a + (1 - h_1)w_1^n + Z_1 - S_1 - C_1^{\min}, h_1\} + \frac{1}{\rho} V(w_2^n - w_2^a, Z_2 + S_1 - C_2^{\min}) \quad (8)$$

Where  $\rho$  is the discount rate and the optimum choice of  $h_2$  is subsumed in the indirect utility function for period 2. We now have two optimum conditions:

$$\begin{aligned} w_1^n - w_1^a &= \frac{\partial U / \partial h_1}{\partial U / \partial C_1} \\ \rho &= \frac{\partial V / \partial S_1}{\partial U / \partial C_1} \end{aligned} \quad (9)$$

Thus, in period 1 we have the tangency condition of budget line and indifference curve, but with the budget line shifted down if savings are positive and hence the possible income effects on  $h_1$  as analysed for period 2 (but for a decline in income rather than increase). The magnitude of the income transfer between periods is determined by the savings condition, stating that the rate of substitution between consumption utility in period 1 for maximum consumption utility in period 2 should equal the rate of time preference. Uncertainty about the artistic wage rate can be included in the same way as above, by using Taylor series expansions in both periods.

### 4.3. Dynamics

The two-period model has an additive separable utility function in time and hence, will be intertemporally consistent: at the beginning of period 1, the artist makes a lifetime plan for time allocation and savings, and if the parameters realize their anticipated values, this plan will be implemented without change. If second-period parameters deviate from their values anticipated at the beginning of period 1, second period choices may deviate from their planned outcomes. Both for anticipated parameter values and for changes in parameter values, a catalogue of cases could be derived for combinations of the 6 cases illustrated in Figure 1. As parameter values may vary widely, this is not a very fruitful approach. Only a dynamic analysis under stable parameter values might be interesting, in particular if some sequences could be ruled out (e.g. from  $h_1 = 0$  to  $0 < h_2 < 1$ ).

A highly relevant issue, however, is the role of endogenous adjustments of expectations. In our model, supply decisions are not made permanently but only twice. They are necessarily based on expected values of the exogenous variables. We will assume given anticipated values for all exogenous variables except the artistic wage. In the stochastic



two-period model, the individual decides on first period allocation of time based on anticipated parameter values of the artistic wage distribution: mean, variance, and skew. Once the decision has been taken, the individual sticks to it; only if the budget line is entirely below minimum consumption the individual will disappear. But the experiences during the first period are bound to have an effect on anticipations of mean, variance and skew in the third period. Thus, the relationship between these distribution parameters and first period experiences (general economic experience, the intensity of artistic work and the likelihood of actual earnings given the assumed distribution parameters) needs careful investigation.

With mean, variance, and skew known, the likelihood of a realized first period outcome can be calculated; this likelihood can be reversed to assess the plausibility of the parameters, and hence, to possibly revise them.

## 5. Conclusion: further work

We are interested in modelling an artist's choice of time allocation between artistic work and a job to earn a living. Formal modelling is useful to derive precise conclusions (predictions) and can provide guidance to future empirical work. The analysis above suggests a number of relevant parameters: artistic and non-artistic wages, non-labour income, minimum consumption and marginal rate of substitution between consumption and artistic labour time, time preference, and risk attitude. The relevance of non-artistic wages and non-labour income has been measured in Casacuberta and Gandelman (2012) and in Bille *et al.* (2017), who also measure a significant effect of artistic earnings. Effects of preference parameters have not been tested. Both studies are static analyses and although the effects of age and experience are acknowledged, career dynamics are not addressed.

We conclude that features that we consider as both exceptional and fascinating, career dynamics of multiple job holding under substantial uncertainty, have not yet received the attention they deserve in formal modelling and empirical analysis.<sup>38</sup> Our modelling, modest as it may be, suggests ways to proceed. Using panel data rather than cross-sections, the formation of expectations and the role of risk attitudes and other preferences may be of further interest to investigate and contribute to better quantitative information on an idiosyncratic artist labour market.

## Appendix A

**Table A1.** Distribution of galleries by percentage of sales price passed on to the artist

| Percentage passed on | Percentage of galleries |         | Total |
|----------------------|-------------------------|---------|-------|
|                      | NGA                     | not NGA |       |
| <41                  | 7                       | 17      | 12    |
| 41–60                | 90                      | 46      | 66    |
| 61–80                | 3                       | 33      | 20    |
| >80                  | 0                       | 4       | 2     |
| Total                | 100                     | 100     | 100   |

Source: van der Valk (2014), Table 20. NGA: *Member of the Netherlands Association of Galleries.*

**Table A2.** Shares of time spent and of income in an average working week

|                                   | Min | Max | Mean  | St Dev |
|-----------------------------------|-----|-----|-------|--------|
| <i>Shares of time spent</i>       |     |     |       |        |
| Artistic work                     | 0   | 100 | 32,12 | 26,34  |
| Art-related work                  | 0   | 90  | 25,60 | 24,74  |
| Not art-related work              | 0   | 100 | 41,48 | 31,28  |
| <i>Shares of income by source</i> |     |     |       |        |
| Artistic work                     | 0   | 100 | 22,64 | 30,39  |
| Art-related work                  | 0   | 100 | 34,62 | 38,17  |
| Not art-related work              | 0   | 100 | 42,74 | 42,68  |

Source: van Winkel *et al.* (2012), Table 3.10.

**Table A3.** Labour market position, income, and wealth of artists

| Artists (occupation),<br>percentages      | n, percentages     |         |                            | n, percentages     |         |                            |
|---|--------------------|---------|----------------------------|--------------------|---------|----------------------------|
|   | 2004–2006          |         |                            | 2007–2009          |         |                            |
|   | All active persons | Artists | Other creative occupations | All active persons | Artists | Other creative occupations |
| Number                                    | 7844               | 117000  | 186000                     | 8274               | 130000  | 184000                     |
| Receive benefit                           | 5                  | 10      | 5                          | 4                  | 10      | 6                          |
| Number of jobs                            |                    |         |                            |                    |         |                            |
| 1   | 94                 | 84      | 89                         | 93                 | 84      | 89                         |
| 2   | 6                  | 13      | 9                          | 7                  | 13      | 9                          |
| >2  | 1                  | 3       | 2                          | 1                  | 3       | 2                          |
| First position                            |                    |         |                            |                    |         |                            |
| Employee                                  | 88                 | 44      | 79                         | 88                 | 43      | 77                         |
| Self-employed                             | 12                 | 56      | 21                         | 12                 | 57      | 23                         |
| Working hours 1st position                |                    |         |                            |                    |         |                            |
| 0–19                                      | 21                 | 16      | 20                         | 20                 | 14      | 19                         |
| 20–34                                     | 25                 | 29      | 26                         | 27                 | 27      | 29                         |
| >34                                       | 55                 | 55      | 54                         | 53                 | 59      | 52                         |
| First position in creative industry       |                    |         |                            |                    |         |                            |
| Yes                                       | 2                  | 12      | 11                         | 2                  | 11      | 11                         |
| No  | 95                 | 81      | 85                         | 93                 | 79      | 83                         |
| Unknown                                   | 4                  | 7       | 5                          | 6                  | 10      | 7                          |
| Second position                           |                    |         |                            |                    |         |                            |
| Employee                                  | 77                 | 73      | 70                         | 76                 | 67      | 67                         |
| Self-employed                             | 23                 | 27      | 30                         | 24                 | 33      | 33                         |
| Working hours 2nd position                |                    |         |                            |                    |         |                            |
| 0–19                                      | 88                 | 83      | 89                         | 88                 | 81      | 84                         |
| 19–34                                     | 10                 | 15      | 9                          | 10                 | 16      | 15                         |
| >34                                       | 1                  |         |                            | 2                  |         |                            |
| Second position in creative industry      |                    |         |                            |                    |         |                            |
| Yes                                       | 5                  | 11      | 9                          | 5                  | 14      | 12                         |
| No  | 84                 | 78      | 77                         | 83                 | 74      | 75                         |
| Unknown                                   | 12                 | 11      | 14                         | 12                 | 12      | 13                         |
| Personal gross annual income, × 1000 euro |                    |         |                            |                    |         |                            |
| <2  | 5                  | 10      | 4                          | 5                  | 7       | 4                          |
| 5–10                                      | 11                 | 15      | 11                         | 10                 | 11      | 11                         |

**Table A3.** Continued

| Artists (occupation), percentages               | n, percentages     |         |                            | n, percentages     |         |                            |
|---|--------------------|---------|----------------------------|--------------------|---------|----------------------------|
|   | 2004–2006          |         |                            | 2007–2009          |         |                            |
|   | All active persons | Artists | Other creative occupations | All active persons | Artists | Other creative occupations |
| 10–20   | 15                 | 17      | 18                         | 14                 | 18      | 17                         |
| 20–30   | 16                 | 14      | 16                         | 15                 | 14      | 15                         |
| 30–40   | 17                 | 14      | 16                         | 15                 | 13      | 16                         |
| 40–50   | 13                 | 10      | 12                         | 14                 | 11      | 13                         |
| 50–60   | 8                  | 7       | 9                          | 9                  | 8       | 9                          |
| >60   | 14                 | 12      | 13                         | 17                 | 16      | 14                         |
| Unknown   | 1                  | 2       | 1                          | 1                  | 1       | 1                          |
| Disposable annual household income, × 1000 euro |                    |         |                            |                    |         |                            |
| <2  | 1                  | 3       | 1                          | 1                  | 2       | 1                          |
| 5–10  | 4                  | 9       | 5                          | 3                  | 5       | 4                          |
| 10–20   | 37                 | 33      | 37                         | 27                 | 27      | 29                         |
| 20–30   | 39                 | 33      | 39                         | 41                 | 35      | 39                         |
| 30–40   | 13                 | 14      | 12                         | 17                 | 18      | 17                         |
| 40–50   | 3                  | 4       | 3                          | 5                  | 7       | 5                          |
| 50–60   | 1                  | 1       | 1                          | 2                  | 2       | 1                          |
| >60   | 1                  | 1       | 1                          | 2                  | 3       | 2                          |
| Unknown   | 1                  | 2       | 1                          | 1                  | 1       | 1                          |
| Household wealth, × 1000 euro                   |                    |         |                            |                    |         |                            |
| <0  |                    |         |                            | 7                  | 7       | 7                          |
| 0–5   |                    |         |                            | 15                 | 13      | 17                         |
| 5–10  |                    |         |                            | 4                  | 5       | 5                          |
| 10–20   |                    |         |                            | 5                  | 6       | 5                          |
| 20–50   |                    |         |                            | 9                  | 10      | 9                          |
| 50–100  |                    |         |                            | 10                 | 10      | 10                         |
| 100–200   |                    |         |                            | 17                 | 14      | 15                         |
| 200–500   |                    |         |                            | 21                 | 20      | 19                         |
| 500–1000  |                    |         |                            | 5                  | 6       | 5                          |
| >1000   |                    |         |                            | 2                  | 3       | 2                          |
| Unknown   |                    |         |                            | 5                  | 5       | 6                          |

Source: CBS (2011), Tables A2, A5, B5; B2, A7, B7; B7; nationally representative data.

**Table A4.** Labour market position, income and wealth, artists (occupation), percentages

|                       | Artists (education), percentages, 2007 |      |        |                    |      |        |                    |      |        |
|-----------------------|--|------|--------|--------------------|------|--------|--------------------|------|--------|
|                       | Cohort 1994                            |      |        | Cohort 1998        |      |        | Cohort 2002        |      |        |
|                       | Creative education                     |      |        | Creative education |      |        | Creative education |      |        |
|                       | No                                     | Yes  | Visual | No                 | Yes  | Visual | No                 | Yes  | Visual |
|                       | 69250                                  | 3570 | 2500   | 70270              | 3380 | 2150   | 73760              | 3150 | 1960   |
| Number                |  |      |        |                    |      |        |                    |      |        |
| Position <sup>a</sup> |  |      |        |                    |      |        |                    |      |        |
| Employee              | 75                                     | 48   | 48     | 80                 | 50   | 51     | 86                 | 60   | 60     |

**Table A4.** Continued

|   | Artists (education), percentages, 2007 |    |    |                    |    |    |                    |    |    |
|---|--|----|----|--------------------|----|----|--------------------|----|----|
|   | Cohort 1994                            |    |    | Cohort 1998        |    |    | Cohort 2002        |    |    |
|   | Creative education                     |    |    | Creative education |    |    | Creative education |    |    |
| Self-employed                             | 9                                      | 32 | 31 | 7                  | 33 | 31 | 2                  | 21 | 23 |
| On social benefit                         | 5                                      | 9  | 10 | 2                  | 6  | 7  | 2                  | 10 | 13 |
| Personal annual gross income, × 1000 euro |  |    |    |                    |    |    |                    |    |    |
| <2  | 3                                      | 7  | 9  | 2                  | 5  | 6  | 2                  | 5  | 6  |
| 5–10                                      | 2                                      | 8  | 8  | 2                  | 8  | 9  | 2                  | 9  | 10 |
| 10–20                                     | 5                                      | 18 | 19 | 4                  | 18 | 18 | 4                  | 21 | 22 |
| 20–30                                     | 8                                      | 17 | 17 | 9                  | 18 | 19 | 9                  | 20 | 22 |
| 30–40                                     | 9                                      | 14 | 15 | 11                 | 15 | 16 | 20                 | 17 | 18 |
| 40–50                                     | 12                                     | 11 | 11 | 16                 | 14 | 15 | 25                 | 13 | 12 |
| 50–60                                     | 13                                     | 8  | 7  | 15                 | 6  | 5  | 16                 | 4  | 3  |
| >60                                       | 42                                     | 10 | 8  | 34                 | 7  | 5  | 17                 | 3  | 2  |
| Unknown                                   | 6                                      | 8  | 6  | 6                  | 6  | 7  | 5                  | 7  | 6  |
| Household wealth, × 1000 euro             |  |    |    |                    |    |    |                    |    |    |
| <0  | 9                                      | 9  | 9  | 13                 | 10 | 11 | 14                 | 10 | 10 |
| 0–5                                       | 4                                      | 12 | 13 | 6                  | 16 | 18 | 13                 | 25 | 27 |
| 5–10                                      | 2                                      | 5  | 5  | 4                  | 6  | 6  | 7                  | 9  | 8  |
| 10–20                                     | 4                                      | 6  | 6  | 6                  | 9  | 9  | 9                  | 10 | 10 |
| 20–50                                     | 10                                     | 12 | 12 | 15                 | 15 | 14 | 15                 | 12 | 12 |
| 50–100                                    | 15                                     | 13 | 13 | 15                 | 11 | 11 | 10                 | 7  | 7  |
| 100–200                                   | 21                                     | 15 | 14 | 16                 | 10 | 9  | 10                 | 7  | 6  |
| 200–500                                   | 21                                     | 15 | 15 | 12                 | 9  | 8  | 9                  | 6  | 6  |
| 500–1000                                  | 5                                      | 3  | 3  | 2                  | 1  | 2  | 2                  | 1  | 2  |
| >1000                                     | 2                                      | 1  | 1  | 1                  | 1  | 1  | 1                  | 1  | 1  |
| Unknown                                   | 8                                      | 10 | 8  | 9                  | 12 | 11 | 10                 | 13 | 11 |

<sup>a</sup>Persons in school, emigrated, deceased, unknown excluded.

Source: CBS (2011); Tables C1a, C1e, C2a, C2e, C3a, C3e.

**Table A5a.** Persons with lower tertiary education (HBO), distributions of income and wealth (mean, standard deviation, skew) in 2007

|   | Cohort 1994        |     |        | Cohort 1998        |     |        | Cohort 2002        |     |        |
|---|--------------------|-----|--------|--------------------|-----|--------|--------------------|-----|--------|
|   | Creative education |     |        | Creative education |     |        | Creative education |     |        |
|   | No                 | Yes | Visual | No                 | Yes | Visual | No                 | Yes | Visual |
| Personal annual gross income, × 1000 euro |                    |     |        |                    |     |        |                    |     |        |
| Mean                                      | 56                 | 32  | 30     | 53                 | 31  | 29     | 46                 | 27  | 26     |
| Standard deviation                        | 93                 | 40  | 36     | 82                 | 34  | 29     | 55                 | 24  | 21     |
| Skew                                      | −101               | −53 | −49    | −96                | −48 | −42    | −71                | −34 | −29    |
| Household wealth, × 1000 euro             |                    |     |        |                    |     |        |                    |     |        |
| Mean                                      | 202                | 140 | 138    | 126                | 96  | 97     | 101                | 75  | 81     |
| Standard deviation                        | 368                | 284 | 284    | 258                | 229 | 234    | 238                | 210 | 222    |
| Skew                                      | 248                | 243 | 245    | 267                | 293 | 306    | 299                | 313 | 321    |

Source: Appendix A Table A4.

**Table A5b.** Distributions of income and wealth (mean, standard deviation, skew), by occupation

|   | 2004–2006          |         |                            | 2007–2009          |         |                            |
|---|--------------------|---------|----------------------------|--------------------|---------|----------------------------|
|   | All active persons | Artists | Other creative occupations | All active persons | Artists | Other creative occupations |
| Personal annual gross income, × 1000 euro       |                    |         |                            |                    |         |                            |
| Mean  | 34                 | 30      | 34                         | 36                 | 34      | 35                         |
| Standard deviation                              | 46                 | 41      | 44                         | 51                 | 49      | 46                         |
| Skew  | −60                | −54     | −58                        | −65                | −63     | −60                        |
| Disposable annual household income, × 1000 euro |                    |         |                            |                    |         |                            |
| Mean  | 23                 | 22      | 23                         | 26                 | 26      | 25                         |
| Standard deviation                              | 14                 | 15      | 14                         | 18                 | 22      | 18                         |
| Skew  | −22                | −22     | −22                        | −29                | −33     | −29                        |
| Household wealth, × 1000 euro                   |                    |         |                            |                    |         |                            |
| Mean  |                    |         |                            | 188                | 205     | 179                        |
| Standard deviation                              |                    |         |                            | 363                | 395     | 354                        |
| Skew  |                    |         |                            | 271                | 340     | 298                        |

Source: Appendix A Table A3.

**Table A6.** Income distribution of graduates from Rietveld Academie in 2011 by year of graduation.

|                        | 1992–1996 | 1997–2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|------------------------|-----------|-----------|------|------|------|------|------|------|------|------|------|
| € 10.000 or less       | 0.24      | 0.34      | 0.28 | 0.44 | 0.23 | 0.36 | 0.31 | 0.40 | 0.52 | 0.43 | 0.37 |
| € 10.001 to €30.000    | 0.50      | 0.50      | 0.52 | 0.26 | 0.50 | 0.40 | 0.41 | 0.50 | 0.29 | 0.35 | 0.46 |
| € 30.001 to €60.000    | 0.13      | 0.05      | 0.07 | 0.12 | 0.13 | 0.09 | 0.13 | 0.06 | 0.06 | 0.10 | 0.02 |
| More than € 60.000     | 0.05      | 0.03      | 0.00 | 0.03 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
| I prefer not to answer | 0.08      | 0.07      | 0.14 | 0.15 | 0.07 | 0.16 | 0.15 | 0.04 | 0.12 | 0.10 | 0.14 |
| N                      | 38        | 58        | 29   | 34   | 30   | 45   | 54   | 48   | 65   | 79   | 83   |

Source: own survey.

**Appendix B Equilibrium conditions under risk**

With stochastic  $w^a$  we can expand the utility function around the mean  $\mu$ . Variance and skew are indicated as  $\sigma^2$  and  $\kappa^3$ , respectively.

$$U\{hw^a + (1 - h)w^n + Z, h\} = U\{h\mu + (1 - h)w^n + Z, h\} + U'_C(w^a - \mu) + \frac{1}{2} U''_C(w^a - \mu)^2 + \frac{1}{6} U'''_C(w^a - \mu)^3$$

$$E[\{., .\}] = U\{h\mu + (1 - h)w^n + Z, h\} + \frac{1}{2} U''_C\sigma^2 + \frac{1}{6} U'''_C\kappa^3$$

Where derivatives of  $U$  have to be evaluated at  $w^a = \mu$ .  
Equilibrium requires

$$\frac{\partial E[U\{\cdot, \cdot\}]}{\partial h} = \frac{\partial U}{\partial C}(\mu - w^n) + \frac{\partial U}{\partial h} + \frac{1}{2} \frac{\partial^3 U}{\partial C^2 \partial h} \sigma^2 + \frac{1}{6} \frac{\partial^4 U}{\partial C^3 \partial h} \kappa^3$$

And hence, we can write<sup>1</sup>

$$\begin{aligned} w^n - \mu &= \frac{\partial U / \partial h}{\partial U / \partial C} + \frac{1}{2} \frac{\partial^3 U}{\partial C^2 \partial h} \frac{1}{\partial U / \partial C} \sigma^2 + \frac{1}{6} \frac{\partial^4 U}{\partial C^3 \partial h} \frac{1}{\partial U / \partial C} \kappa^3 \\ &= \frac{\partial U / \partial h}{\partial U / \partial C} \left\{ 1 + \frac{1}{2} \frac{\partial^3 U}{\partial C^2 \partial h} \frac{1}{\partial U \partial h} \sigma^2 + \frac{1}{6} \frac{\partial^4 U}{\partial C^3 \partial h} \frac{1}{\partial U \partial h} \kappa^3 \right\} \end{aligned}$$

With  $U = C^\alpha h^{1-\alpha}$ , we get the following derivatives

$$\frac{\partial U}{\partial C} = \alpha \frac{U}{C} > 0 \quad \frac{\partial U}{\partial h} = (1 - \alpha) \frac{U}{h} > 0$$

$$\frac{\partial^2 U}{\partial C^2} = \alpha \frac{1}{C} \frac{\partial U}{\partial C} - \alpha \frac{U}{C^2} = \alpha(\alpha - 1) \frac{U}{C^2} < 0$$

$$\frac{\partial^3 U}{\partial C^3} = \alpha(\alpha - 1) \left[ \frac{1}{C^2} \frac{\partial U}{\partial C} - 2 \frac{U}{C^3} \right] = \alpha(\alpha - 1)(\alpha - 2) \frac{U}{C^3} > 0$$

$$\frac{\partial^3 U}{\partial C^2 \partial h} = \alpha(\alpha - 1) \frac{1}{C^2} - \frac{\partial U}{\partial h} < 0$$

$$\frac{\partial^4 U}{\partial C^3 \partial h} = \alpha(\alpha - 1)(\alpha - 2) \frac{1}{C^3} - \frac{\partial U}{\partial h} > 0$$

## Notes

<sup>1</sup> See Hartog and Zorlu (1999) for an example.

<sup>2</sup> The primary art market is where artworks are sold from the artist, usually through the mediation of an art gallery, to the first buyer (Singer and Lynch, 1994).

<sup>3</sup> Differences among submarkets for artistic disciplines have been highlighted by Frey and Pommerhne (1989), Menger (1999) and Throsby (1994).

<sup>4</sup> Autonomous work refers to work that fully derives from the artists' own inspiration and desires. Contract work may leave the artist the same freedom (like a commission to make a sculpture or paint a portrait in his own style) or may strongly constrain him (for instance painters who copy iconic paintings on demand). The relevant distinction is artistic freedom but that may not always be properly measured.

<sup>5</sup>However, empirical evidence from the Netherlands is lacking.

<sup>6</sup>In a sense this paper is a sequel to our paper on selection for admission to a prestigious residency programme for visual artists (Kackovic *et al.*, 2018).

<sup>7</sup>Most of these features are documented and related to the scholarly literature by Menger (1999). Abbing (undated) relates in particular to the Dutch situation, and also refers to the international literature. Throsby (2012) refers to empirical evidence on several of the features. Robinson and Montgomery (2000) present an empirical analysis of artists' allocation of time among art and other work and their response to financial incentives and give references to similar work.

<sup>8</sup>The dummy variables for large size and expensive materials in the price function estimated by Frey and Pommerehne (1989) are only two among 15 explanatory variables; their contribution to explained variance is not reported.

<sup>9</sup>There exists a modest collection of estimated demand functions for art, but no solid body of empirical evidence on the structure of demand for art. See Throsby (1994).

<sup>10</sup>Note that in this interpretation the work of art *is* the signal; this is in a sense the reverse of a signal from an art expert as an indicator of the quality of an artwork; see Kackovic (2016, p. 14).

<sup>11</sup><http://petapixel.com/2015/03/21/the-10-ikea-piece-an-interesting-social-experiment-on-the-value-of-art>.

<sup>12</sup>Abbing (2002, p. 112) cites empirical evidence on what he calls the 'income penalty', the gap between actual earnings and their alternative option, of 7–15 per cent in early studies and argues that this is an underestimate. Filer (1986) estimates, for the US, a gap of 10 per cent, with large variations among various artistic occupations. Steiner and Schneider (2013) find, in German data, that artists have much higher job satisfaction than non-artists. Contrary to non-artists, artists have no lower satisfaction from work if they work more hours.

<sup>13</sup>Answers are not mutually exclusive.

<sup>14</sup>Of course, exceptions occur. An example of full artistic autonomy for an employee is a university position in an arts programme that requires that employee maintain the status of a respected 'autonomous' artist.

<sup>15</sup>The secondary market may also generate income, but data on magnitudes are lacking. For visual artworks, there is a 'volgrecht' or *droit de suite*: artists are entitled to a reward for later sales of artworks yielding more than 3 000 euro. The duty starts at 4 per cent for sales prices up to 50,000 euro, and is then gradually reduced to 0.25 per cent at sales price above 500,000. The later transaction should involve a professional art dealer, does not apply to sales to a museum and has a maximum of 12,500 euro. Sales below 10,000 euro within 3 years are also exempt. Source: Vergoeding op doorverkoop van kunstwerken (Volgrecht), Ministerie van Veiligheid en Justitie, Directie Voorlichting, Den Haag (undated). An economic analysis of this *droit de suite* is given by Solow (1998) and Filer (1984) who also presents history of concept and legislation; artists' appreciations of the *droit de suite* are discussed in Frank (2015).

<sup>16</sup>Moving to the secondary market does not imply moving to the top of the market; it may also entail relegation to the lower end of the market ('deaccession').

<sup>17</sup>Vinken (2016, p. 39) notes that we have no Dutch data on artist sales to different types of buyers (like collectors, museums, etc.) and on the distribution of sales by sales channels.

<sup>18</sup>Contracts vary greatly, depending on standing and reputation of the gallery and the artist. They may just specify commission rates, but they may also relate to nature and frequency of representation, exhibitions, etc.

<sup>19</sup>The data are based on a survey among 150 of the 475 galleries in the Netherlands, representing 75 per cent of the galleries that could be contacted in a telephone interview.

<sup>20</sup>Data on recruiters and football agents from Henrik Nissen (recruiter).

<sup>21</sup>Menger (2001) and Throsby (1994) discuss at some length the difficulties of measuring the occupation of artist.

<sup>22</sup>HBOs (*Hoger beroepsonderwijs*) are universities of applied science that oriented towards higher learning and professional training.

<sup>23</sup>The Research Centre for Education and the Labour Market (ROA) is a research institute of the Maastricht University School of Business and Economics in the Netherlands.

<sup>24</sup>Weda *et al.* (2011) clearly illustrate positive skew in income distributions for artistic occupations (an elongated upper tail), but there are no separate data for visual artists.

<sup>25</sup>Listed in CBS (2011), Table A1a, p. 65.

<sup>26</sup>Listed in CBS (2011), Schema 7, p. 46.

<sup>27</sup>In each cohort, visual artists make up about two-thirds of all creative graduates.

<sup>28</sup>Rengers (2002) analyses earnings and participation behaviour of Dutch art school graduates 1.5 and 6 years after graduation, in relation to demographic and schooling characteristics, but does not estimate a dynamic model.

<sup>29</sup>Assuming the total number of respondents is 396, as Table 3.60 o.c. suggests.

<sup>30</sup>The sociologist Bourdieu (1989) even calls the value creation of art works beyond production cost an act of magic, performed by the entire field of collaborating art experts, mediators, agents, critics, museum directors, etc. (o.c., 256, 252).

<sup>31</sup>The model differs from the so-called moonlighting model where an individual takes on a second job to satisfy consumption desires (or ‘needs’) as here the second job generates utility instead of disutility.

<sup>32</sup>Analytically, we may subsume  $C^{\min}$  in  $Z$ , as we do later. Here, we keep them separate for expositional purpose.

<sup>33</sup>Throsby (1994bis) presents Australian evidence supporting the basic premises of the model: a large majority of artists have higher non-artistic wage than artistic wage, with non-artistic wage higher than artistic wage only 2 per cent have zero artistic working hours and with artistic wage higher than non-artistic wage some 80 per cent work full-time as an artist.

<sup>34</sup>Singer (1981) applies Lancaster’s theory of consumption goods as bundles of characteristics, but we are not convinced of the benefits of this elaborate analysis. We do not believe that the market for art can be decomposed in a market for underlying characteristics like ‘decorativeness’ (colour, composition, pigmentation, etc.) and intellectual appeal (catching art historical significance).

<sup>35</sup>The coefficient can be written as

$$\frac{\partial(\partial^2 U / \partial C^2)}{\partial h} \frac{1}{\partial U / \partial C}$$

<sup>36</sup>Menger (1999) discusses the role of artists’ risk attitude and the interpretation of multiple job holding as risk diversification.

<sup>37</sup>Thus, the model does not fit the ‘mad potter of Biloxi’ who made thousands of pieces of pottery, all different, lived in poverty because he asked outrageous prices and did not sell anything, and closed his kiln when he got a large inheritance (and from then on only worked to increase his fame as a loon). The Waits and McNertney (1984) seems a better match. See <http://www.smithsonianmag.com/arts-culture/the-mad-potter-of-biloxi-106065115/>

<sup>38</sup>Menger (2009) and Alper and Wassal (2009) discuss uncertainty and lifecycle aspects, but do not develop formal modelling.

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