

Financial problems and debt as predictive factors of recidivism

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FINANCIAL PROBLEMS AND DEBT AS PREDICTIVE FACTORS FOR RECIDIVISM

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This study aimed to examine the unique predictive validity of debt regarding recidivism and what elements are specifically predictive. This was done based on a Dutch sample of 250 people on probation using an explorative research tool, the Finances, Debt, and Offending Scale (FDOS). Cox survival regression and receiver operating characteristics analyses were conducted on the total FDOS and its individual items as predictors and diverse recidivism criteria. The average follow-up duration was 5.41 years. The results show that debt moderately predicts recidivism (adjusted for other predictors). The FDOS significantly predicted recidivism on all three levels of severity, and regarding the type of crime, it predicted recidivism in property and drug-related crime. Earlier debt and probation officers' indications of whether finances are criminogenic were especially predictive. These insights may help frontline service providers better understand the role of finances in recidivism, measure financial problems in risk assessment, and select interventions.

Keywords: financial problems; debt; crime; recidivism; predictive factor

INTRODUCTION

Many criminological and forensic psychological studies into desistance from crime have paid substantial attention to crime risk factors and ways to prevent repeated crime. These studies have shown that reducing several risk factors for criminal behavior contributes to desistance (e.g., Laub & Sampson, 2001, 2003; Moffitt, 1993, 2012). In their work about the psychology of criminal conduct, Bonta and Andrews (2017) distinguished factors related to the biological basis of criminal behavior, antisocial personality patterns, the role of pro-criminal associates and attitudes, substance abuse, and the social context relating to family, relationships, school, work, leisure or recreation, and neighborhood as major risk factors in

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criminal conduct. An important model on which many intervention methods within the forensic field are based is the risk-needs-responsivity model (RNR model) of Bonta and Andrews (2017). This model states that interventions should focus on and be in line with the risk type, needs, and responsivity of the involved person. Interventions based on the RNR model principles appear to be the most successful in reducing the risk of recidivism (Andrews, 2012).

MACROECONOMIC PERSPECTIVE

Knowledge concerning risk factors for (repeated) offending has dramatically increased over the last 25 years, and methods to assess and manage risks have been developed and improved (e.g., Cullen & Gendreau, 2001; Douglas & Otto, 2021; Durnescu, 2012). However, to date, relatively little attention has been paid to financial problems and debt as potential predictive factors for (re)offending. For example, Bonta and Andrews (2017) did not include finances as one of the main criminogenic factors that they identified (the so-called “big eight”), and Gendreau et al. (1996) did not include financial problems either in their meta-analysis of the predictors of adult offender recidivism. Moreover, in exploring the relationship between debt and crime, research has mainly focused on macroeconomic factors, such as poverty (Comanor & Phillips, 2002; Galloway & Skardhamar, 2010; Hsieh & Pugh, 1993), the economic situation of neighborhoods (Leventhal & Brooks-Gunn, 2001), and unemployment (Bjerk, 2007; Phillips & Land, 2012; Skardhamar & Savolainen, 2014). In addition, there is a growing body of research on the relationship between court related fees and crime (Bannon et al., 2010; Link, 2021; Montes et al., 2021). However, several studies have demonstrated that individual debt may be a better indicator of worsening financial situations than macroeconomic factors (see Aaltonen et al., 2013). The financial situation of the individual may thus yield valuable knowledge about the relationship between debt and crime. In addition, insight into individual debt enables frontline service providers working with justice-involved people to make adequate risk assessments and help clients with their finances to prevent recidivism. Nevertheless, few studies have investigated the relationship between debt and crime at this individual level.

THEORETICAL EVIDENCE

Three criminological theories on persistence in and desistance from criminal behavior in general can provide specific insights into the relationship between debt and crime: (1) the strain theory, (2) the developmental taxonomic theory, and (3) self-control theories (van Beek et al., 2020b). First, the strain theory explains criminal behavior by the strain between needs and the abilities to satisfy these needs (Agnew, 1985, 2006a; Merton, 1938). Applying this theory to debt, it can be stated that the fact that people who have debt have less access to material goods might lead to crime as a response to the stress that debt causes (Dreentea, 2000; Felson et al., 2012) or more directly income-generating crime aiming to satisfy material needs (Becker, 1968).

A second theory of criminal behavior, the developmental taxonomic theory posed by Moffitt (1993), makes a distinction between two types of people committing crimes based on their criminal trajectory over their life-course. The first group includes people whose antisocial behavior is restricted to the adolescence and who often have relatively unproblematic backgrounds and are mainly influenced by antisocial peers. The second group

includes people whose antisocial behavior continues throughout their life and who persist in crime during their life-course. Moffitt explains the difference between the two groups by factors that may make it more difficult for people to stop committing crimes, so-called snares. These snares, such as drug addiction, interrupted education, and teenage parenthood, may be the factors contributing to the persistence of adolescents in antisocial behavior, as it is difficult to escape from them (Franken et al., 2015; McGee et al., 2015; Moffitt, 1993). These groups often also experience relatively more problems later in life as well in various life domains, including financial problems, which might be due to the underlying deficits causing problems regarding attention, self-control, impulsivity, and problem solving, as well as more practical problems such as problems regarding reading and writing. Regarding debt, this theory might imply that debt could be seen both as a direct risk factor for crime and also as being interrelated with crime as debt might be associated with problems in other domains, especially for people persisting in crime. According to this theory, debt might thus increase the risk of crime and may be one of the factors in the persistence of adolescents in crime, and conversely, crime may increase debt, particularly among people persisting in crime in their life-course. Third, self-control theories explain criminal behavior by a lack of self-control that develops in childhood due to various factors (Gottfredson & Hirschi, 1990; Jessor, 1991). These theories might imply that debt and crime are correlated by low self-control, impulsivity, and risk taking, as they could lead to both debt and crime.

EMPIRICAL EVIDENCE

The few studies that have been conducted on the relationship between financial problems and crime studies, mainly concentrating on adolescents and young adults, show that financial problems and debt likely are important criminogenic factors (e.g., Agnew, 2001; Bonta & Andrews, 2017; Shader, 2001; Whiting & Fazel, 2020). Financial problems have been shown to increase the risk of crime (Aaltonen et al., 2016; Blom et al., 2011; Hoeve et al., 2011, 2014, 2016; van Beek et al., 2020b). This increased risk is especially present for people who recidivate frequently (de Jong, 2017). Blom et al. (2011) found, based on a secondary data-analysis on the Monitor Self-reported Youth Crime (a longitudinal survey to measure youth crime), evidence of causality between debt and (self-reported) delinquency, regardless of the type of delinquency. The more young adults experience debt, the more they show delinquent behavior, especially property crime. Hoeve et al. (2011) showed, based on a systematic review and secondary qualitative and quantitative analyses, that adolescents and young adults who have more debt show more delinquent behavior than adolescents without debt. In another systematic review and meta-analysis, the same scholars found strong associations between debt and crime. In addition, relatively stronger associations between debt and crime were found when crime was measured before debt than the other way around. Particularly, strong associations were found between serious and persistent crime in young people and later debt in young adulthood (Hoeve et al., 2014).

Aaltonen et al. (2016) used longitudinal register-based data from the national debt enforcement authorities and incorporated official data on debt defaults and types of debt that represented the general Finnish young adult population, stating that the review of Hoeve et al. (2014) was limited by a selection bias because many of the studies that they included focused on samples of university students. Aaltonen et al. (2016) showed that the

association between debt problems and crime is a result of reciprocal causation. Levels of all types of crime were consistently higher during periods of debt enforcement, the increase in levels of crime took place almost immediately after the start of the debt default period, and the mean number of crimes grew steadily as debt enforcement duration increased. There were indications of moderately increasing debt intensity before a conviction. The results were clearer for crime-related debt. Debt worsened as a consequence of crime, a large percentage of all crime-related debt entered enforcement, and once the debtors entered enforcement, they often stayed there for a long time. Based on three measurement waves over a time span of 6 years in a study among a sample of 1,258 adolescents and young adults from the general population (ranging from 12 to 24 years), Hoeve et al. (2016) demonstrated that the reciprocal associations between financial problems and crime become stronger over time (Hoeve et al., 2016). These studies thus demonstrated that debt may have severe consequences for individuals, may increase the risk of crime, and may hinder resocialization and desistance from crime. In addition, these studies showed that debt and crime reinforce each other in a negative way and that this relationship might increase the risk of recidivism and may lead to a series of cumulative problems.

DEBT AS PREDICTOR FOR CRIME

Although theoretical evidence for the relationship between debt and crime is strong and debt was found to be related to a higher risk of recidivism (van Dam, 2005), less is known about the unique influence of financial problems and debt on recidivism and the specific predictive elements, adjusted for other predictors, and this can be used in institutionally conducted crime risk assessment procedures. Over the past decades, empirical knowledge about risk assessment has grown tremendously, more than 200 risk assessment tools have been developed (for an overview, see Douglas & Otto, 2021), and some studies correlated financial subscales to established risk assessments (e.g., Level of Service Inventory-Revised [LSI-R], Correctional Offender Management Profiling for Alternative Sanctions [COMPAS], Wisconsin, and Ohio Risk Assessment System [ORAS]; Caudy et al., 2013; Hsu et al., 2009; Rettinger & Andrews, 2010). Frontline service providers in forensic mental health and criminal justice settings often use crime risk assessment instruments, and in many cases, they are even obliged to do so (e.g., Viljoen & Vincent, 2020).

Using structured risk assessment instruments in the forensic field has proven helpful in developing risk management strategies, including providing the most suitable interventions (Douglas & Otto, 2021). However, most of the widely used risk assessment tools do not specifically or explicitly include finances and debt as risk factors, or only to a limited extent. Moore (2015) investigated different risk assessment instruments, and of the 25 investigated instruments, only five explicitly included items on finances. For example, the LSI-R includes two items on finances. Other widely used instruments such as the Historical-Clinical-Risk Management-20 (HCR-20) do not include items on finances (Moore, 2015). This is also true for its revision, the HCR-20^{V3} (Douglas et al., 2013). Moreover, the risk assessment system used by the probation and prison service in England and Wales pays limited attention to finances and debt (Offender Assessment System [OASys]; see Moore, 2015; OASys Home Office, 2002). This is also true for the Recidivism Assessment Scales, which the Dutch probation service uses by default and is based on the OASys (Recidive Inschattingsschalen [RISc]; see Bosker, 2015; van der Knaap & Alberda, 2009). The

financial RISC subscale includes items on the primary income source, average net monthly income, current financial situation, budget limitations, addiction-related financial problems, and the relationship between financial and criminal behaviors. However, while mainly focusing on income and finances, relating to the clients' perspective on this life domain, it does not regard whether there are currently financial problems or debt and if there was debt earlier in life.

In the daily supervision of clients, attention to financial problems and debt as risk factors for recidivism is also limited. Probation officers supervise many clients with the overall goal of supporting rehabilitation and reintegration, for which assessing risks and preventing recidivism is crucial. Supervising probation officers focus on specific risk factors of the individual, including problematic substance use and antisocial attitudes. However, probation officers generally pay little attention to financial problems and debt as risk factors for recidivism (van Beek et al., 2020a, 2021).

PRESENT STUDY

Although there are several studies investigating the relationship between risk factors (including finances) and recidivism, less is known about the unique influence of debt problems on recidivism, controlling for other risk factors. The studies described are often more theoretically based ones and focused on other populations, and the predictive validity at the individual level among people on probation has not often been empirically tested. Therefore, our study focuses at disentangling the specific predictive validity of finances regarding recidivism. The first aim of the present study is to investigate finances and debt as predictive factors for recidivism, controlling for other potential risk factors, such as adverse childhood experiences, unstable living situation, low level of education, unstable working situation, (mental) health care in childhood and adulthood, intellectual disabilities, and mental and physical health problems (Bonta & Andrews, 2017). The second aim is to identify what elements of finances and debt are specifically predictive. For frontline service providers working with clients in daily practice, such as probation officers, it is essential to know about predictive risk factors as it may help them better understand the financial part of the predictive factors, assess the risk of recidivism of the clients they supervise, measure financial problems in risk assessment instruments, and select the appropriate interventions and methods to prevent recidivism. Based on the described prior theoretical and empirical evidence, two hypotheses were formulated:

Hypothesis 1: Financial problems significantly predict recidivism.

Hypothesis 2: Financial problems are especially predictive of recidivism in offenses directly related to finances, such as property crime and drug-related offenses.

METHOD

PROCEDURE AND INSTRUMENT

The present study is part of a larger research project on the relationship between financial problems and crime in people on probation. The current study analyzes data from a sample of 250 adults assisted by the Dutch probation service (i.e., 18 years or older) (van Beek et al., 2020a). The study design and the manner of collecting, analyzing, and saving data were approved by the ethics committee of the involved university of applied sciences. The

authors also declare that they honor the International Standards for Authors of the Committee on Publication Ethics. Data were collected with the official permission of the Dutch probation service. Permission to research the clients' data is included in the general privacy statement of the Dutch probation service.

Risk Assessment Data

First, data were used from the Recidivism Assessment Scales (RISc; for an overview of the Dutch probation service and the background of the RISc, see Bosker, 2015; van der Knaap & Alberda, 2009). The RISc includes subscales on (1) current offense; (2) offending history; (3) accommodation; (4) education, employment, and learning; (5) income and financial management; (6) relationships with partner, family, and relatives; (7) relationships with peers and acquaintances; (8) drug abuse; (9) alcohol abuse; (10) antisocial behavior; (11) thinking, behavior, and abilities; and (12) procriminal attitudes. The interrater reliability is moderate to substantial for most RISc items (Cohen's K for nominal items; Tinsley and Weiss's T for ordinal items .30–.87, with most items between .41 and .79; van der Knaap & Alberda, 2009). The predictive validity for general recidivism of the total RISc score was moderate (area under the curve [AUC] = .70). Only the RISc subscale on income and financial management was used for the present study. This subscale was found to correlate significantly with general recidivism ($r = .21, p = .001$). However, because van der Knaap and Alberda (2009) did not analyze the items of the financial subscale separately, the present study analyzes the individual RISc items of this RISc subscale on finances as a first step.

Finances, Debt, and Offending Scale

Although the RISc contains items on finances and is among the crime risk assessment instruments paying the most attention to finances, its financial subscale mainly focuses on income and financial management and not on debt. Moreover, not all RISc items are always completely scored, and probation officers can sometimes only give a rough indication without background information (Bosker, 2015). Therefore, to complement the information that the risk assessment data provide, more detailed and concrete background information on the scores of the RISc was retrieved from client files in the information and registration system of the Dutch probation service (including case management plans and evaluations based on a standardized and structured format). To better understand the financial and debt problems of clients, the following additional predictors—based on a literature review (van Beek et al., 2020a, 2020b)—on finances, debt, and financial assistance were included: (1) changes in income sources, (2) debt level, (3) creditors, and (4) financial assistance. The following predictors regarding other life domains were included to account for other potential recidivism risk factors: (1) adverse childhood experiences, (2) an unstable living situation, (3) low educational level, (4) unstable working situation, (5) history with (mental) health care in childhood and adulthood, (6) intellectual disabilities, and (7) mental and physical health problems. All predictors were scored by three independent researchers who frequently discussed their predictor ratings to check for inconsistencies.

In line with findings from the literature and using the items of the risk assessment data and the additional predictors from the client files, in this study, a scale was developed as an explorative research tool in addition to the RISc named the Finances, Debt, and Offending Scale (FDOS; Cronbach's $\alpha = .65$). The FDOS consists of 12 financial items: Five items

are about income and debt (income source, net monthly income, debt earlier in life, budget limitations, and debt level); four items are about the relationship between debt and crime (the relationship between income and crime, finances as a criminogenic factor, cause of crime, and type of crime); and three are items about assistance with debt problems (financial goals, special conditions regarding finances [conditions under which justice-involved people are not incarcerated but may participate relatively free in society, such as a mandatory participation in debt counseling], and financial assistance).

As a first step, the presence of any of these items was recorded for each client file. For example, concerning the item financial goal, it was scored whether a supervision goal on finances (e.g., paying off debt) was present in the case management plan or not. All items were then recoded dichotomously, either “risky” or “not risky,” indicating whether the financial situation may be a risk factor for recidivism for a specific client or not. For instance, when the item relationship between income and crime was coded by probation officers in the risk assessment as “yes,” it was recoded as “risky”; when probation officers coded it as “no,” it was recoded as “not risky.” When the probation officer indicated in the risk assessment that the motivation for the offense was financial or financial in combination with other motivations (e.g., addiction), it was recoded as “yes”; when there was another motivation for the offense (e.g., group pressure), it was recoded as “not risky.”

Recidivism

Data on recidivism were collected from the recidivism monitor of the Dutch Scientific Research and Documentation Center (WODC), the research department of the Dutch Ministry of Justice and Security. One of their projects is a longitudinal recidivism monitoring study among multiple groups of justice-involved people by standardized recidivism measures based on data from the official Dutch judicial documentation system. The data on recidivism from the recidivism monitor of the WODC are encrypted to ensure privacy. The recidivism monitor includes data about the frequency of diverse types of recidivism and the time (in days) to reoffending per degree of severity of the offense (three degrees, i.e., general, severe, and very severe recidivism) and per type of offense (seven types, i.e., recidivism into violent crime, sexual offenses, property crime with or without violence, offenses relating to demolition and disturbance of the public peace, drug-related crime and traffic offenses). General recidivism (including low severe recidivism) is defined as reconviictions following any offense irrespective of its nature and severity. Severe recidivism relates to reconviictions due to offenses punishable by a maximum custodial sentence between 4 and 8 years or for which pretrial can be imposed. Very severe recidivism relates to reconviictions due to offenses punishable by a maximum custodial sentence of more than 8 years. All different types of offenses can be general, severe, or very severe.

SAMPLE

Three probation organizations exist in the Netherlands, the Dutch Probation Service (Reclassering Nederland [RN]), the Institute for Social Rehabilitation of Addicted Offenders (Stichting Verslavingsreclassering GGZ [SVG]), and the Salvation Army Probation Service (Leger des Heils Jeugdbescherming & Reclassering [LJ&R]). Probation officers in the Netherlands are usually educated at universities of applied sciences and are trained to identify problems, assess risks, and use the RISC. In 2015, the three Dutch probation

organizations completed a total of 15,845 probation supervision cases relating to 13,944 unique clients. Data were used from a random sample of 250 clients, drawn using SPSS's random sampling feature, from the Dutch probation supervision cases completed in 2015. For this sample, the follow-up period was long enough to analyze recidivism data. Of the 250 clients, 235 were men (94.0%), and 15 were women (6.0%). Of these 250 clients, 124 (49.6%) were supervised by RN, 102 (40.8%) by SVG, and 24 (9.6%) by LJ&R. The age distribution in the sample was as follows: 18–25 years, $n = 40$; 26–30 years, $n = 43$; 31–40 years, $n = 83$; 41–50 years, $n = 51$; and 51 years or older, $n = 33$. The distributions over probation organizations, regions, and gender in the sample were representative of the distribution of the total population of the supervision cases completed in 2015. The mean age of the sample (37.1 years) was slightly higher than that of the total population (34.6 years). Of the clients, 213 had the Dutch nationality, 2 had the nationality of another Western country, and 35 had a non-Western nationality. Moreover, 178 clients were born in the Netherlands, 4 in other Western countries, and 70 in non-Western countries (van Beek et al., 2020a).

STATISTICAL ANALYSIS

To analyze if financial problems and debt are predictive for different types of recidivism and to understand which items are particularly predictive, Cox survival regression (Holm method, model assumptions are met) and receiver operating characteristics (ROC) analyses were conducted. This was done using IBM SPSS Statistics 25 for Windows. Analyses were based on the RISC data, the FDOS data, the individual financial items of both instruments as predictors, and diverse recidivism criteria. First, the predictive validity of the RISC and the individual items of the subscale on income and financial management were analyzed. Second, the predictive validity of the explorative research tool FDOS and its individual items was analyzed. In addition, incremental predictive validity analyses were conducted comparing the RISC total score to the FDOS total score.

Cox survival regression analyses (Hazard ratio) were conducted to estimate the predictive value of debt for recidivism, adjusting for other predictors. Because only two clients committed sex offenses, making the base rate for sexual offending very low, no analyses were conducted on this offense type.

In addition, ROC analyses were performed relating to the predictive validity of the RISC, FDOS, and their individual items on finances. The major advantage of ROC analyses is that they are insensitive to base rates (Rice & Harris, 2005). ROC analyses result in a plot of the true positive rate (sensitivity) against the false positive rate (1 minus specificity) for every possible cutoff score. The AUC in the plot represents the probability that a randomly selected client who recidivates would score higher on the RISC or FDOS than a randomly selected client who does not reoffend. An AUC of .50 can be interpreted as chance prediction, and an AUC of 1.0 as a perfect prediction. Rice and Harris (2005) provided guidelines for interpreting AUC values, which facilitate comparison across studies applying different effect sizes. These guidelines state that AUC values between .56 and .64 can be compared to Cohen's d of .20 and interpreted as small effect, AUC values between .64 and .71 can be compared to Cohen's d of .50 and interpreted as medium effect, and AUC values of .71 and above can be compared to Cohen's d of .80 and interpreted as large effect (see also Douglas et al., 2005; Mossman, 2013).

Adjustment for Other Predictors

The Cox survival regression analyses also controlled for the influence of other factors that, based on the literature (e.g., Bonta & Andrews, 2017; van Beek et al., 2020a, 2020b), are potential predictors of recidivism: adverse childhood experiences, unstable living situation, low educational level, unstable working situation, history with (mental) health care in childhood and adulthood, intellectual disabilities, and mental and physical health problems. Controlling for the influence of nonfinancial factors was done by including them in the first block of regression analyses and the FDOS items in the second block.

RESULTS

RECIDIVISM DESCRIPTIVE INFORMATION

The average follow-up time until recidivism or the end of the study is 5.41 years ($SD = 0.44$; range: 1.50–5.97 years). Regarding the severity of recidivism, of the 250 clients, 174 (69.6%) relapsed into general recidivism, 165 (66.0%) in severe recidivism, and 45 (18.0%) in very severe recidivism. Concerning the type of recidivism, 88 (35.2%) of all clients committed violent crime, 2 (0.8%) sex offenses, 19 (7.6%) property crime with violence, 114 (45.6%) property crime without violence, 67 (26.8%) offenses relating to demolition and disturbance of the public peace, 40 (16.0%) drug-related crime, 44 (17.6%) traffic offenses, and 61 clients (24.4%) committed other offenses. Offense counts overlap because some clients committed multiple offense types.

PREDICTIVE VALIDITY OF THE FINANCIAL RISC SUBSCALE

Total Score

The Cox survival regression analyses showed that the financial RISC subscale did not significantly predict recidivism by different levels of severity and different offense types (Table 1). The ROC analyses showed that the financial RISC subscale moderately predicted severe recidivism and property crime (Table 1). The findings thus showed that the financial RISC subscale significantly predicted severe recidivism and recidivism into property crime without violence and into violent crime. This indicated that clients who score higher on the financial RISC subscale have a higher risk to recidivate in these crime types.

Individual RISC Items on Finances

The Cox survival regression analyses showed that the relationship between income and crime significantly predicted general and severe recidivism (see Table 2). The relationship between income and crime significantly predicted property crime (with and without violence), and net monthly income significantly predicted recidivism in offenses relating to demolition and disturbance of the public peace and drug-related crime. The ROC analyses demonstrated that the predictive validity of the individual financial RISC items of the RISC was moderate. A significant predictor of the (very) severe recidivism was financial problems related to substance abuse, and budget limitations significantly predicted property crime without violence and drug-related crime, net monthly income offenses relating to demolition and disturbance of the public peace and drug-related crime, and financial problems related to substance abuse, income source, and relationship between income and crime

TABLE 1: Predictive Validity of the Total Scores of the Financial RISC Subscale and the FDOS Relating to the Severity and Type of Recidivism (Cox Survival Regression Analyses and ROC Analyses)

Severity and type	RISC			FDOS		
	eB	AUC	CI	eB	AUC	CI
Severity						
General	.00	.614	[.519, .664]	.12***	.655	[.580, .730]
Severe	.00	.616**	[.544, .619]	.14***	.664***	[.591, .737]
Very severe	.00	.525	[.426, .623]	.17**	.613*	[.538, .688]
Type						
Violent	.00	.591*	[.519, .664]	.05	.540	[.467, .614]
Property with violence	.00	.569	[.432, .705]	.25*	.662*	[.560, .764]
Property without violence	.00	.606**	[.536, .676]	.20***	.683***	[.618, .748]
Demolition and disturbance of the public peace	.00	.576	[.494, .657]	-.04	.478	[.404, .553]
Drug	.00	.485	[.387, .583]	.19*	.611*	[.528, .694]
Traffic	.00	.579	[.493, .665]	-.06	.450	[.357, .542]
Other	.00	.542	[.456, .627]	-.03	.489	[.410, .568]

Note. The Cox regression findings are the second block of findings reported for space considerations controlling for the following potential risk factors: adverse childhood experiences, unstable living situation, low level of education, unstable working situation, (mental) health care in childhood and adulthood, intellectual disabilities, and mental and physical health problems. RISC = Recidivism Assessment Scales (Recidive Inschattingsschalen); FDOS = Finances, Debt, and Offending Scale; ROC = receiver operating characteristic; AUC = area under the curve; CI = 95% confidence interval; eB = regression coefficient.

* $p < .05$. ** $p < .01$. *** $p < .001$.

property crime (Table 2). The Cox survival regression and ROC analyses both indicated that clients who have a low net monthly income and for whom the probation officers consider the committed crime to be related to finances reoffend often and faster, especially in (very) severe crime and property crime.

PREDICTIVE VALIDITY OF THE TOTAL SCORE OF THE FDOS

The Cox survival regression model of the total FDOS data was significant for recidivism of all levels of severity (Table 1). The ROC analyses demonstrated a moderate predictive validity of the FDOS for (very) severe recidivism (Table 1). Both the Cox survival regression model and the ROC analyses showed that the FDOS significantly predicted recidivism into property crime and drug-related crime (Table 1). These findings indicated that clients who have a risky financial situation have a higher risk of recidivism regardless of severity, especially regarding property and drug-related crime (Table 1).

PREDICTIVE VALIDITY OF THE INDIVIDUAL FDOS ITEMS

Severity

The Cox survival regression analyses showed that debt earlier in life significantly predicted recidivism of all levels of severity (Table 3). The ROC analyses demonstrated that the predictive validity of the individual FDOS items was moderate for (very) severe recidivism. Significant predictors of severe recidivism were budget limitations, finances as a criminogenic factor, and relationship between income and crime. Debt earlier in life

TABLE 2: Predictive Validity of the Individual Financial RISC Items Relating to the Severity and Type of Recidivism (Cox Survival Regression Analyses and ROC Analyses)

Severity and type	Income source			Net monthly income			Budget limitations			Financial problems related to substance abuse			Relationship between income and crime		
	eB	AUC	CI	eB	AUC	CI	eB	AUC	CI	eB	AUC	CI	eB	AUC	CI
Severity															
General	.00	.565	[.490, .640]	-.00	.491	[.416, .567]	.01	.662	[.590, .734]	.00	.599	[.526, .673]	-.24*	.443	[.369, .517]
Severe	.00	.571	[.498, .644]	-.01	.486	[.413, .560]	.01	.671***	[.601, .741]	.00	.603**	[.531, .674]	-.30*	.441	[.368, .513]
Very severe	-.77	.501	[.409, .593]	.00	.501	[.411, .591]	.00	.553	[.466, .641]	.00	.594*	[.501, .696]	-.42	.427	[.330, .524]
Type															
Violence	-.01	.518	[.443, .594]	.04	.549	[.473, .625]	-.01	.574	[.502, .647]	.00	.558	[.483, .634]	-.09	.473	[.397, .549]
Property with violence	-.17	.580	[.446, .713]	.01	.511	[.375, .647]	.02	.622	[.498, .747]	-.03	.702**	[.588, .816]	-1.02*	.361*	[.233, .489]
Property without violence	.00	.597**	[.526, .669]	-.04	.461	[.388, .533]	.00	.701***	[.635, .766]	.01	.644***	[.574, .713]	-.35*	.452	[.378, .526]
Demolition and disturbance of the public peace	-.01	.476	[.397, .556]	.10**	.611**	[.533, .689]	.01	.542	[.462, .621]	.00	.518	[.436, .600]	.04	.491	[.412, .570]
Drugs	.02	.583	[.482, .684]	-.17*	.370**	[.276, .465]	.01	.602*	[.510, .695]	-.00	.515	[.417, .613]	-.10	.481	[.372, .591]
Traffic	-.14	.476	[.384, .567]	.04	.517	[.422, .611]	.01	.545	[.452, .638]	.00	.514	[.419, .608]	.06	.537	[.440, .634]
Other	.01	.485	[.402, .568]	.03	.544	[.463, .624]	.01	.542	[.458, .627]	-.01	.496	[.412, .579]	.20	.546	[.462, .631]

Note. The Cox regression findings are the second block of findings reported for space considerations controlling for the following potential risk factors: adverse childhood experiences, unstable living situation, low level of education, unstable working situation, (mental) health care in childhood and adulthood, intellectual disabilities, and mental and physical health problems. RISC = Recidivism Assessment Scales (Recidive Inschattingsschalen); ROC = receiver operating characteristic; AUC = area under the curve; CI = 95% confidence interval; eB = regression coefficient.

* $p < .05$. ** $p < .01$. *** $p < .001$.

TABLE 3: Predictive Validity of the Individual FDOS Items Relating to the Severity and Type of Recidivism (Cox Survival Regression Analyses and ROC Analyses)

Severity and type	Income source			Net monthly income			Debt earlier in life			Budget limitations		
	eB	AUC	CI	eB	AUC	CI	eB	AUC	CI	eB	AUC	CI
Severity												
General	.02	.565	[.490, .640]	-.11	.502	[.424, .580]	.37*	.536	[.459, .613]	.25	.628	[.553, .704]
Severe	-.05	.567	[.493, .640]	-.11	.506	[.430, .582]	.47*	.558	[.484, .632]	.32	.639***	[.566, .712]
Very severe	-.53	.514	[.420, .608]	.25	.536	[.444, .628]	.82*	.602*	[.507, .696]	.32	.579	[.489, .669]
Type												
Violence	.13	.515	[.439, .590]	-.35	.461	[.385, .536]	.23	.505	[.430, .580]	.74*	.603**	[.530, .675]
Property with violence	-1.07	.600	[.462, .739]	.33	.513	[.378, .647]	1.07	.566	[.427, .704]	-.26	.596	[.469, .722]
Property without violence	.01	.590*	[.519, .661]	.05	.546	[.474, .617]	.12	.506	[.434, .578]	.44	.663***	[.595, .730]
Demolition and disturbance of the public peace	-.21	.471	[.397, .557]	-.83	.421	[.340, .502]	-.02	.489	[.408, .569]	.20	.535	[.455, .616]
Drugs	.12	.567	[.467, .667]	.69	.585	[.492, .677]	-.05	.500	[.402, .598]	.46	.583	[.490, .677]
Traffic	-.29	.491	[.397, .584]	-.33	.476	[.381, .570]	-.20	.456	[.365, .547]	.17	.533	[.439, .626]
Other	-.33	.472	[.390, .554]	.04	.499	[.416, .583]	-.25	.486	[.403, .569]	.12	.509	[.426, .592]
				Relationship between debt and crime			Finances as a criminogenic factor			Cause of crime		
				eB	AUC	CI	eB	AUC	CI	eB	AUC	CI
Severity												
General	.09	.541	[.462, .620]	.33	.587	[.512, .662]	.45	.640	[.566, .713]	-.42	.515	[.437, .592]
Severe	.13	.543	[.467, .620]	.45	.595*	[.522, .668]	.41	.635***	[.563, .707]	-.45	.516	[.440, .591]
Very severe	.37	.517	[.424, .609]	.30	.591	[.498, .684]	.76	.584	[.493, .675]	.46	.568	[.472, .664]
Type												
Violence	-.17	.508	[.433, .583]	.15	.537	[.462, .612]	.11	.556	[.482, .631]	-.36	.478	[.404, .553]
Property with violence	.87	.533	[.402, .664]	.43	.634	[.503, .764]	2.29*	.694**	[.584, .803]	.40	.624	[.485, .764]
Property without violence	.09	.516	[.444, .588]	.54*	.599**	[.528, .669]	.65	.676***	[.609, .743]	-.57*	.501	[.429, .573]

(continued)

TABLE 3: (continued)

Severity and type	Debt level			Relationship between debt and crime			Finances as a criminogenic factor			Cause of crime		
	eB	AUC	CI	eB	AUC	CI	eB	AUC	CI	eB	AUC	CI
Demolition and disturbance of the public peace	-.16	.512	[.432, .593]	-.26	.493	[.412, .573]	.45	.526	[.445, .607]	-.50	.456	[.377, .534]
Drugs	.24	.513	[.416, .610]	.17	.569	[.471, .667]	.21	.584	[.488, .679]	.44	.578	[.477, .679]
Traffic	-.07	.500	[.405, .594]	.30	.488	[.394, .581]	.58	.537	[.443, .631]	-.47	.476	[.384, .569]
Other	-.18	.485	[.401, .569]	-.45	.474	[.391, .557]	.06	.494	[.411, .578]	.30	.512	[.428, .596]
	Type of crime			Financial goals			Special conditions on finances			Financial assistance		
	eB	AUC	CI	eB	AUC	CI	eB	AUC	CI	eB	AUC	CI
General	.29	.614	[.537, .691]	-.25	.543	[.465, .621]	-.15	.506	[.428, .538]	.19	.537	[.460, .615]
Severe	.23	.596*	[.520, .671]	-.15	.566	[.490, .642]	-.17	.504	[.429, .580]	.13	.528	[.452, .603]
Very severe	-.08	.562	[.472, .652]	-.51	.495	[.402, .589]	-.41	.480	[.388, .571]	-.20	.491	[.397, .584]
Type												
Violence	-.26	.495	[.419, .570]	-.08	.523	[.448, .598]	-.64	.475	[.401, .550]	.12	.531	[.456, .606]
Property with violence	-.93	.500	[.364, .635]	-.56	.460	[.323, .597]	-.22	.503	[.367, .639]	-.53	.507	[.372, .643]
Property without violence	.17	.572*	[.501, .643]	.22	.594*	[.524, .664]	-.36	.505	[.433, .577]	.29	.553	[.481, .625]
Demolition and disturbance of the public peace	-.21	.466	[.385, .547]	.62	.554	[.475, .633]	-.42	.483	[.403, .563]	-.05	.512	[.431, .593]
Drugs	.38	.570	[.477, .664]	-.27	.499	[.401, .597]	-.11	.470	[.376, .564]	.46	.494	[.396, .592]
Traffic	-.49	.475	[.380, .570]	-.24	.477	[.382, .572]	-.61	.481	[.389, .573]	-.24	.428	[.336, .519]
Other	.08	.494	[.410, .578]	.22	.524	[.441, .607]	-.06	.499	[.416, .582]	-.01	.510	[.427, .594]

Note. The Cox regression findings are the second block of findings reported for space considerations controlling for the following potential risk factors: adverse childhood experiences, unstable living situation, low level of education, unstable working situation, (mental) health care in childhood and adulthood, intellectual disabilities, and mental and physical health problems. FDOS = Finances, Debt, and Offending Scale; ROC = receiver operating characteristic; AUC = area under the curve; CI = 95% confidence interval; eB = regression coefficient.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

significantly predicted very severe recidivism (Table 3). These findings indicated especially the fact that people having debt earlier in life and probation officers considering clients' finances as a criminogenic factor and relating it to the committed crime are predictors of recidivism on different levels of recidivism. This holds specifically for recidivism into (very) severe crime.

Type

The Cox survival regression analyses showed that budget limitations significantly predicted recidivism into violent crime and that the relationship between income and crime and cause of crime and finances as a criminogenic factor significantly predicted recidivism into property crime (Table 3). The ROC analyses showed that the predictive validity of the individual FDOS items was moderate, especially for property crime. Budget limitations significantly predicted recidivism into violent crime, and income source, budget limitations, relationship between debt and crime, finances as a criminogenic factor, type of crime, and financial goals significantly predicted recidivism into property crime (Table 3). The Cox survival regression and ROC analyses both indicated especially whether clients have budget limitations or not and whether the probation officer considered clients' finances as criminogenic as predictors of recidivism.

COMPARISON RISC AND FDOS

Combined Cox survival regression and ROC analyses demonstrated that the FDOS significantly predicts both recidivism severity and type (specifically property and drug-related crime), whereas the RISC does not (Table 4).

DISCUSSION

Knowledge of risk factors for crime has grown substantially, there is a theoretical relationship between financial problems and crime, and methods to assess and manage risks have been developed and improved over the last decades. Several studies have been carried out on the relationship between debt and crime. However, only limited number of studies have been performed on the predictive validity of financial problems and debt for recidivism and the specific predictive elements, and even less among the population of people on probation. The most important conclusion from the present study is that financial problems are a moderate predictor for recidivism on different levels of severity and some types of recidivism, especially property crime. A possible explanation for the latter is that this type of offense is most clearly related to financial stress and may thus be specifically committed to resolve debt. These findings confirm both hypotheses and are in line with earlier studies (e.g., Blom et al., 2011; Felson et al., 2012). For instance, Felson et al. (2012) concluded that the consequences of stress specifically seem to motivate crimes that target the problem creating the stress, such as property crime like theft or drug dealing in response to running out of money, either as a rational choice or as an emotional impulse (see also Agnew, 2006a, 2006b).

A remarkable finding is that financial problems are less predictive or not predictive at all of other types of recidivism than property crime. This can be explained by the fact that only property crimes are directly related to finances, whereas the other types of crime are less predictive or not predictive at all. However, it could be that they are indirectly related to financial problems. For example, drug-related crime might be committed to gain money,

TABLE 4: Incremental Predictive Validity of the Total Scores of the Financial RiSc Subscale and the FDOS Relating to the Severity and Type of Recidivism (Cox Survival Regression Analyses and ROC Analyses)

Severity and type	RiSc			FDOS		
	eB	AUC	CI	eB	AUC	CI
Severity						
General	.00*	.614**	[.539, .689]	.12***	.655***	[.580, .730]
Severe	.00*	.616**	[.544, .689]	.13***	.664***	[.591, .737]
Very severe	.00	.525	[.426, .623]	.14*	.613*	[.538, .688]
Type						
Violent	.00	.591*	[.467, .614]	.05	.540	[.467, .614]
Property with violence	.00	.569	[.432, .705]	.23*	.662*	[.560, .764]
Property without violence	.01*	.606**	[.536, .676]	.19***	.683***	[.618, .748]
Demolition and disturbance of the public peace	.00	.576	[.494, .657]	-.02	.478	[.404, .553]
Drug	.00	.485	[.387, .583]	.15*	.611*	[.528, .694]
Traffic	.00	.579	[.493, .665]	-.06	.450	[.357, .542]
Other	.00	.542	[.456, .627]	-.01	.489	[.410, .568]

Note. The Cox regression findings are the second block of findings reported for space considerations controlling for the following potential risk factors: adverse childhood experiences, unstable living situation, low level of education, unstable working situation, (mental) health care in childhood and adulthood, intellectual disabilities, and mental and physical health problems. RiSc = Recidivism Assessment Scales (Recidive Inschattingsschalen); FDOS = Finances, Debt, and Offending Scale; ROC = receiver operating characteristic; AUC = area under the curve; CI = 95% confidence interval; eB = regression coefficient.

* $p < .05$. ** $p < .01$. *** $p < .001$.

and violent crimes and offenses relating to demolition and disturbance of the public peace may be an aggressive reaction as a result of financial strain. Although financial problems may not be a direct predictor of these types of crime, it is thus essential to pay attention to financial problems as a factor that influences many life domains and may indirectly lead to other types of crime.

The results demonstrate that the FDOS was predictive of recidivism, regardless of severity. Items particularly predictive of (very) severe recidivism were if clients had debt earlier in life and if the financial situation of clients was considered as a criminogenic factor by the probation officer. The results also show that the FDOS is especially predictive of recidivism into property crime (with and without violence) and drug-related crime. In particular, clients' net monthly income, whether clients have budget limitations, and whether the probation officer considers clients' finances as criminogenic are predictors for recidivism, particularly for property crime without violence. In addition, the results of this study show that the general recidivism rate among people on probation is 69.6%, which is high in comparison to other studies. For example, Verweij and Weijters (2020) found a risk of 51% that people on community supervision will relapse into general crime in the first 4 years after starting the supervision. They also found a risk of 7% (versus 18% in our study) that they will relapse into very severe crime.

STRENGTHS AND LIMITATIONS

The present study has both strengths and limitations. The first strength of this study is that, as far as the authors are aware, to date, this is one of the few studies focusing on the extent to

which financial problems and debt are predictive of recidivism. Second, the sample of people on probation whose data have been used represents the whole Dutch population of people on probation as the distributions over probation organizations, regions, and gender in the sample were representative of the distribution of the total population. Third, data were collected and combined from two sources: risk assessments and more in-depth information from client files. Data were thus collected from both a validated instrument and a more detailed source of practice-based information. The information in the client files was based on both formal and informal sources (e.g., documents, such as advisory reports, and both formal and informal referees, such as other frontline service providers and family), and probation officers usually verify the information about clients by consulting different sources as much as possible.

Fourth, this study can be considered a field study because a part of the data have been collected in real-life practice. Results are based on existing risk assessment data from actual clients coded by probation officers based on their professional judgment in daily practice and not on controlled research among a specific participant group. This corresponds to the need for more field studies, as expressed by several scholars (e.g., de Beuf et al., 2021; Edens & Boccaccini, 2017). A final strength is that this study controlled for other potential predictors of recidivism, enabling the exploration of to which extent specific financial factors are predictive. The results showed that financial factors are predictive, controlled for these other potential predictors, indicating that the predictive validity can be primarily attributed to the financial factors.

The present study also has several limitations that should be taken into account. The first limitation is that unregistered crime—the so-called “dark number”—cannot be considered in studies exploring recidivism. Data analyses can thus only be performed on registered recidivism. Therefore, the actual frequency of recidivism may be even higher. In addition, low severity recidivism is included in the category of general recidivism in the registration data and cannot be parsed out, which may have influenced the results. The second limitation can be the generalizability of the results to other forensic groups as this study has been conducted among a sample of people on probation. However, the purpose of this study was to investigate the background of financial problems and its predictive validity for recidivism in this specific target group. Third, the generalizability from the Dutch context to other contexts may be a limitation as the criminal justice system and other contextual factors, such as inequality, differ per country. Fourth, there were several limitations with respect to statistical analyses, with some related to the fact that the study is a field study. For example, we could not assess interrater reliability.

Moreover, the study design is correlational and cannot mitigate threats to internal validity, and the sample size is too small to include all items in a multivariate model to make claims about the relative or incremental utility of items. In addition, the data based on scores of probation officers may be subjective or not fully reliable. For example, probation officers may not correctly assess whether financial factors motivated an offense or the extent to which finance-related stress is experienced by the client, and self-reported data are not included in the study. However, it should be noted that probation officers in the Netherlands have usually received multiple trainings in assessing risks and are highly educated, at universities of applied sciences. Furthermore, we found low internal consistency for the FDOS, and multiple comparisons may have impacted the results. However, as the aim of the study was not to develop an instrument but to get insight into the predictive validity of

financial problems, we believe the results provide insight into this topic notwithstanding the low internal consistency of the FDOS.

IMPLICATIONS

The findings that financial problems and debt, in general, are predictors for recidivism and that recidivism among people on community supervision is high and often concerns (very) severe offenses emphasize the societal importance of assisting with debt problems. This is especially true when the probation officer considers the client's financial situation a criminogenic factor. Having debt earlier in life is also predictive, particularly for (very) severe recidivism. The study thus helps frontline service providers better understand the role of finances in recidivism. It also provides insights that indicate what items risk assessments should prioritize and may help frontline service providers measuring financial problems in risk assessment. In addition, based on this, the findings may help frontline service providers selecting interventions.

Furthermore, it is thus vital for probation officers to consider earlier debt and indications that the client's financial situation is criminogenic as important risk signals. Probation officers can only take this into account if they have more knowledge about this predictive value. Therefore, more training and theoretical knowledge about specific predictive factors, such as earlier debt and probation officers' indications of whether finances are criminogenic, are needed. In addition, insight into what works and what does not in supervision for individuals and groups is crucial for probation officers to be able to make more accurate risk assessments and select which interventions are most suitable for risk management and prevention.

In addition to financial problems and debt being predictive factors for reoffending and (very) severe offenses, previous studies have shown that financial problems and debt are strongly related to other life domains (van Beek et al., 2020a, 2020b). It can thus be concluded that financial problems and debt influence all life domains and are both direct and indirect risk factors for reoffending. Therefore, it is essential for frontline service providers working with clients to always consider finances as a risk factor.

FUTURE RESEARCH

First, as the RISC does not significantly predict recidivism severity and type, it can be concluded that the FDOS is a better predictor of recidivism than the RISC. Although the tool of the FDOS was not developed as a risk assessment tool, it may still be helpful in research and practice, gaining more refined insight into financial problems. Therefore, in future research, a validation study of the instrument is recommended. Second, as the present study was conducted among a specific group, to gain more specific and broadly useful insights into various forensic disciplines, replication of the study among other forensic samples, such as people on community supervision from different countries, prisoners, patients of forensic mental health care facilities, or juvenile delinquents, is recommended. Especially, going deeper into the influence of the national context on the topic might be an interesting suggestion regarding future research. Third, the present study shows that financial problems are predictive of crime. Therefore, it might be interesting in future research to get more specific insights into the causal relation between debt and crime.

Fourth, the other predictors we included in our study were based on literature and earlier studies. Unfortunately, however, not all information deemed relevant in the literature was available and/or of sufficient quality in our study (e.g., the factor antisocial attitude was not assessed). Therefore, future research controlling for other predictors such as criminal history, antisocial attitudes, criminal thinking, and criminal associates could be recommended. Fifth, as the present study is based on information scored by probation officers, future research including self-report data of justice-involved people would be valuable. It would especially be insightful in future research to investigate more qualitatively what frontline service providers and clients experience when it comes to the relationship between debt and crime and what interventions can be used in daily supervision based on the insights of the present study regarding the predictive validity of debt.

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SUPPLEMENTAL MATERIAL

Supplemental Material is available in the online version of this article at <http://journals.sagepub.com/home/cjb>.

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