



## Central school exit exams and labor-market outcomes



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### ABSTRACT

Many countries use centralized exit exams as a governance device of the school system. While abundant evidence suggests positive effects of central exams on achievement tests, previous research on university-bound students shows no effects on subsequent earnings. We suggest that labor-market effects may be more imminent for students leaving school directly for the labor market and, on rigid labor markets, for unemployment. Exploiting variation in exit-exam systems across German states, we find that central exams are indeed associated with higher earnings for students from the school type directly bound for the labor market, as well as with lower unemployment.

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### 1. Introduction

In a pursuit to raise educational outcomes, education policy in many countries currently aims to improve accountability in the school system. One governance instrument to increase accountability is external exit exams that provide outcome information that is comparable across schools on an external standard.<sup>1</sup> Central school exams have been argued to improve the signaling of educational achievement on the labor market and to increase labor-market productivity through increased human capital. And indeed, external exit exams at the end of secondary school are regularly shown to be associated with better student test scores (e.g., Bishop, 2006). However, critics warn that this result may be related to students' higher test-taking ability, rather than actual higher knowledge and skills, which casts doubt on the genuine improvements in human capital associated with central exams. In fact, it has proven hard to ascertain effects of central exams on labor-market outcomes. In this paper, we show that state-wide external exit exams are significantly related to higher subsequent individual earnings and lower unemployment on the German labor market, in particular for students who leave high school directly for the labor market.

The limited empirical evidence on labor-market effects of central exams in the existing literature is partly due to the lack of within-country variation in examination systems and of datasets that allow linking school examination systems to later labor-market outcomes at the individual level. Thus, Bishop et al. (2000) examine the effect of external exit exams across U.S. states, but such an analysis is ultimately limited to a comparison of New York State to all other U.S. states. For Germany, which has more extensive

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<sup>1</sup> On the political economy of decentralized vs. central education systems in general, see Gradstein et al. (2005) and Glomm et al. (2011).

within-country variation across states, [Backes-Gellner and Veen \(2008\)](#) fail to find a positive effect of central school exit exams on labor-market earnings.

We propose two reasons why labor-market effects of central school exit exams might have been missed in the existing research using the valuable German between-state variation. First, in the highly tracked German school system, the existing research focuses on earnings of students of the highest school track that prepares for university entry. But students of the lower school tracks – who are also faced with central exams in some states but not in others – may be more likely to see labor-market consequences based on their high-school leaving certificates. They tend to enter the labor market directly after receiving their high-school leaving certificates, whereas the labor-market consequences of school exit exams may be more limited for high-track students who tend to first enter university and only later the labor market, by which time their university diploma may be more important. Second, restricting the analysis of labor-market outcomes to earnings may be overly restrictive in the setting of a rigid labor market where earnings structures are mostly determined by central bargaining. When wages cannot adjust, labor-market consequences may emerge in the form of unemployment.

The evidence provided in this paper suggests that both types of reasoning have empirical relevance. Our analysis builds on the fact that until recently, German states were roughly divided in half on whether they have central exams or not. This allows us to observe workers with schooling from systems with central exams and workers with schooling from systems without central exams in the same German labor market. We use two datasets – the German Socio-Economic Panel (SOEP) and the Graduate Panel of the Higher Education Information System (HIS) – that allow us to link the observed state of school degree and exam type of individual students to their later labor-market outcomes in Germany. By doing so, we can also check whether previous results might have been biased towards zero because of attenuation bias from using the state of residence as a proxy for the state in which individuals actually obtained their school degree.

While our results confirm that the existence of central school exit exams is unrelated to the earnings of high-track (*Abitur*) students, we find that students from the lowest track (*Hauptschule*) have higher earnings if they received their high-school leaving certificate in a state with central exams. We also find that graduates from both the low-track and the high-track schools have lower rates of unemployment when their school exit exam was centrally administered. Important associations of central school exams with labor-market outcomes thus surface in areas where research has not looked so far. These associations are consistent with theoretical models (see [Section 2.1](#)) that suggest that central exams may have important labor-market consequences when graduates leave school directly for the labor market.

Subsample analyses by gender and age group show that the associations between central exams and labor-market outcomes emerge for both genders but tend to be stronger for females. The earnings associations for low-track graduates are roughly constant across age groups, whereas the unemployment results for low- and high-track graduates tend to decrease with age.

Our results are based on standard cross-sectional earnings functions that express labor-market outcomes as a function of standard factors such as education and age. As such, they have to be viewed as descriptive. Whether the reported associations reflect causal effects depends on the extent to which other, omitted variables relate to both school exam types and labor-market conditions. For example, differences in regional labor markets may coincide with high-school examination regimes. Because these regimes have been in place for several decades, it is hard to disentangle whether they are the cause of regional labor-market conditions (including long-term general-equilibrium adjustments of labor markets to regional skill levels) or just correlate with them.<sup>2</sup> At least, in a set of sensitivity analyses, we confirm that the results are robust to adding controls for a set of factors that may be related to regional labor-market performance independent of the school exam system, such as the share of students in the different school tracks in a state, parental education, other characteristics of the school systems, and a rich set of more than 60 industry dummies. While our results extend on the current state of the literature on the subject, the observational character of the reported relationships prevents us from going deeper into causal inferences. Thus, we interpret the presented evidence as descriptive patterns that are consistent with theoretical predictions that central school exams can affect labor-market outcomes.

The remainder of the paper is structured as follows. [Section 2](#) provides theoretical background and reviews existing evidence that motivates our analysis. [Section 3](#) briefly describes the examination systems of the different German states and introduces the two longitudinal datasets that allow us to link school exams to labor-market outcomes at the individual level. [Section 4](#) introduces the empirical model and reports our results on the association of central exams with earnings and with unemployment for graduates from different types of high schools. [Section 5](#) concludes.

## 2. Conceptual background and existing evidence

In this paper, we use the term central exams to refer to what [Bishop \(1997\)](#) has termed “curriculum-based external exit examination systems (CBEEES).” He defines CBEEES as 1) producing signals of student achievement that have real consequences for the students; 2) defining achievement relative to an external standard, not relative to other students in the classroom or school; 3) being organized by discipline and keyed to the content of specific course sequences; 4) signaling multiple levels of achievement in the subject, not only a pass-fail signal; 5) covering almost all secondary school students; and 6) assessing a major portion of what students studying a subject are expected to know.

<sup>2</sup> The limited extent and selective nature of cross-state migration, in particular for low-track graduates, prevent us from disentangling school-exam regimes from regional labor markets by looking at between-state movers.

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