



Plan responses to diagnosis-based payment: Evidence from Germany's morbidity-based risk adjustment



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ABSTRACT

Many competitive health insurance markets adjust payments to participating health plans according to their enrollees' risk – including based on diagnostic information. We investigate responses of German health plans to the introduction of morbidity-based risk adjustment in the Statutory Health Insurance in 2009, which triggers payments based on “validated” diagnoses by providers. Using the regulator's data from office-based physicians, we estimate a difference-in-difference analysis of the change in the share and number of validated diagnoses for ICD codes that are inside or outside the risk adjustment but are otherwise similar. We find a differential increase in the share of validated diagnoses of 2.6 and 3.6 percentage points (3–4%) between 2008 and 2013. This increase appears to originate from both a shift from not-validated toward validated diagnoses and an increase in the number of such diagnoses. Overall, our results indicate that plans were successful in influencing physicians' coding practices in a way that could lead to higher payments.

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1. Introduction

Competitive health insurance markets generally calibrate per-capita transfers to health plans based on the risk of their covered populations. In order to enhance the accuracy of payments, risk adjustment (RA) systems in the United States and many European countries have evolved from adjusting payments based on demographic factors to also include diagnosis-based morbidity indicators. However, these payment systems create a financial incentive for plans to report diagnoses that are included in the RA and trigger high payments (relative to resource costs). Plans can encourage coding that is appropriate (“right-coding”) or that unduly substitutes more generously-paid codes for less generously-paid ones (“upcoding”). The resulting change in coding patterns can lead to nominal changes in disease profiles (i.e., increased prevalence of certain diagnoses and/or increased severity) that do not reflect changes in actual disease patterns and severity.

A possible increase in nominal coding due to morbidity-based payments raises several concerns (Geruso and Layton, 2015; Kronick and Welch, 2014). First, in settings without overall budget cap, as in the US Medicare Advantage program and the Health Insurance Exchanges, increases in nominal coding and coding intensity that have no real basis can unduly increase government spending. In the context of Medicare, this concern has triggered repeated legislative adjustments to payments, e.g., via the Deficit Reduction Act of 2005; the Affordable Care Act of 2010; and the American Taxpayer's Relief Act of 2012 (Kronick and Welch, 2014). Second, in contexts where RA is used to allocate a fixed budget, as in many European countries, such as in Germany, the Netherlands, Belgium and Switzerland, this behavior can generate inefficiencies by distorting the allocation of resources between competing health plans. Third, increases in nominal coding can change patient profiles, as codes are assigned to patients that lack an adequate basis for a diagnosis, or as patients with low severity are assigned to higher-severity codes. As consequence, over time the average costs for the affected diagnoses may fall, pushing down the payment associated with the specific risk adjuster. Because all plans would receive this lower payment, this effect can force all market participants to lower cost or increase revenue, potentially leading to undesirable behavior such as risk-selection or reinforcing intensive coding.

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Finally, this behavior can divert health plans' attention from organizing provision to engaging in rent-seeking. Plans that successfully manipulate coding may then use some of the additional earnings to distort consumer choices of plans, e.g., by offering premium rebates or supplemental benefits (Geruso and Layton, 2015).

In this paper we examine the impacts on coding of office-based physicians from the introduction of the morbidity-based RA in the German Statutory Health Insurance (SHI) in 2009. The "morbi-RA" replaced a more basic system that adjusted for age, sex and disability-to-work status. The new system includes these parameters, as well as morbidity groups for 80 illnesses that are constructed based on ICD-10 diagnosis codes from hospitals and office-based physicians. Unlike in the US, German health plans are generally not allowed to own or operate health care facilities and contracting is mostly done collectively between the plan and provider associations. However, as described below, even within this heavily regulated environment, German plans have several ways to encourage physicians to adopt coding practices that are associated with (higher) payments through the RA.

We focus on a subtle payment-relevant feature of the German RA system, the designation of outpatient diagnoses. The German SHI's RA scheme only takes into account diagnoses made by office-based physicians if the latter have designated the diagnosis as "validated". Validation means that the physician is affirming the patient has the respective condition, as opposed to merely suspecting a diagnosis or recording an earlier diagnosis that is no longer relevant. In this paper, we examine changes in prevalence and count of diagnoses that are "validated" and hence taken into account by the RA scheme. We estimate the impact of the RA on the documentation of these diagnoses in difference-in-difference analyses on a random sample of administrative data used to execute the RA payments for the years 2008–2013. Specifically, we examine the change over time in the share and count of validated diagnoses at the level of an individual ICD code, for codes that were or were not part of the RA scheme. Our analyses are based on diagnoses submitted by office-based physicians who are not required to report validated diagnoses but who are required to mark each diagnoses as validated or not, and whose individual payments are based on procedures and not diagnoses codes.

Fig. 1 previews our main finding that the average share of validated diagnoses increases faster for codes that are included in the RA scheme relative to those diagnoses that are excluded. The regression estimates indicate that the relative increase for these codes was 2.6 and 3.6 percentage points between 2008 and 2013. We also find that this effect is driven by both a shift from not-validated toward validated (payment-relevant) diagnoses and an increase in the number of such diagnoses. We further investigate differences in this effect across types of health plans and find that although this effect exists for most plan types, regional health plans may have experienced larger changes in coding than their competitors. This could indicate that the substantial and historical local ties of regional plans provide an effective means to shape physician coding practices, and may act as a substitute for explicit vertical integration in settings like the United States (Geruso and Layton, 2015). Our results are robust to excluding those codes and groups of codes that changed over time because of revisions of the RA system or the ICD catalog. We argue that these effects are likely the consequences of nominal rather than real changes in morbidity, as the latter are unlikely to affect only payment-relevant codes (and should therefore be captured by our control group) and are unlikely to differ across plan types. Finally, we find no clear correlation between payments to plans for specific diagnoses and the change in the coding patterns, possibly because plans are unable to narrowly target specific diagnoses due to practical or legal constraints.

Research on plan responses to coding incentives in the US Medicare program has leveraged the fact that RA is only used for the

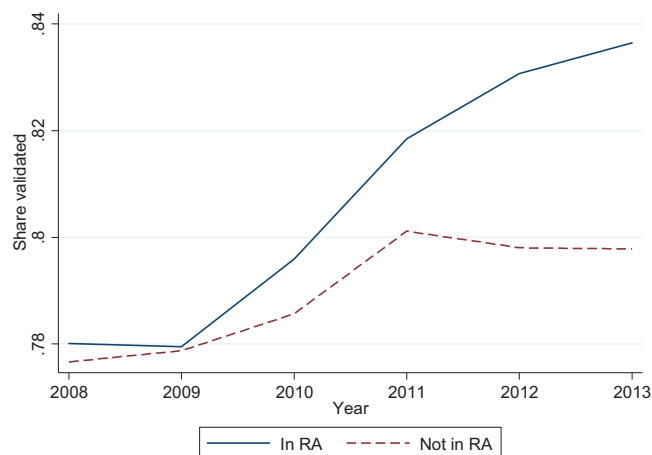


Fig. 1. Share of validated diagnoses averaged across ICD codes.

Notes: Based on 10% sample of claims submitted by health insurance plans to the German insurance regulator. Share validated calculated on level of ICD code and averaged across codes included in risk adjustment scheme (in RA) and excluded (Not in RA) for each year.

Medicare Advantage (MA) component and not for the Fee-for-Service (FFS) component. FFS is used as control group to capture real changes in diagnoses that can be subtracted from the combined nominal and real changes in the MA diagnoses, after accounting for risk selection between MA and FFS. Using this approach, Kronick and Welch (2014) find that each year between 2004 and 2013, risk scores in MA rise faster than risk scores in FFS. They conclude that this rise in relative risk score reflects changes in coding intensity rather than real increases in morbidity. Geruso and Layton (2015) investigate differences in coding intensities for FFS and MA, and among types of MA plans. They estimate that the relatively more intensive coding by MA plans generates risk scores that are 6–16% higher than they would have been in FFS. They also find that the risk scores are higher for MA insurers that are vertically integrated with providers, possibly because this makes it easier for insurers to influence providers' coding behavior.

A related literature on hospitals' responses to diagnosis-based payments has exploited the introduction of the diagnosis-related group (DRG) payment system or recalibrations in the payments of specific DRGs. Jürges and Köberlein (2015) examine how German hospitals responded to the introduction of DRG payments in 2003 by focusing on sharp thresholds for birth weight in DRG assignments that determine payments for preterm babies. They find that hospitals responded to the introduction of the birth weight thresholds by shifting newborns' reported birth weights from above to below the relevant thresholds, leading to DRGs with higher payment. Dafny (2005) studies US hospitals' responses to a recalibration of Medicare's DRG reimbursements in 1988. She investigates pairs of codes that are clinically similar but are associated with different payment amounts. Her findings suggest that the share of lucrative codes within a pair increased in the pairs' payment gap. She also finds that the response was primarily nominal (via coding practices) rather than real (changes in admission volumes and intensity of care). For the period after the 1988 change, Silverman and Skinner (2004) find a disproportionate increase in the prevalence of most generous codes for pneumonia and respiratory infections. A similar methodology has been used to document responses to changes in DRG payments by hospitals in Portugal and Norway (Barros and Braun, 2016; Januleviciute et al., 2016). Sacarny (2016) evaluates hospitals' responses to a 2008 reform that increased Medicare payments for claims that had detailed codes describing the patients' type of heart failure. He finds that hospitals were aware of the rewards to more detailed coding and responded

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