



Incentive pay and performance: Insider econometrics in a multi-unit firm

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ABSTRACT

Exploiting organizational reforms in a foreign-owned bank in Central-East Europe, we carry out an insider econometrics study of the implementation of modern human resource management reforms giving some employees high-powered incentives. We use branch-level panel data and particular features of the reform process to implement two estimators that address endogeneity bias (an outstanding issue in this literature) in a complementary fashion: an IV approach and Generalized Propensity Score estimation. In line with theory we show that some reforms had a positive impact on productivity. We also underscore the risks of introducing quantity-based incentives where quality is important.

1. Introduction

As firms in emerging markets cope with rising wages and institutional reforms, there has been a growing interest in the efficacy of modern human resource management (HRM) policies and information technology in these markets (Bloom et al., 2013; Commander et al., 2011). In this paper, we analyze an important episode of organizational reform at a foreign-owned bank in Central-East Europe (CEE) to expand our understanding of the relationship between HRM policies and firm-level performance in emerging markets. Our analysis uses data from 180 bank branches over 20 quarters between 2003 and 2007. Over this period, the bank rolled out new HRM policies in its branches, which introduced job differentiation and high-powered incentives for sales staff but not for others. Methodologically, we advance the HRM literature by using two complementary approaches to address endogeneity bias.¹

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The extent to which incentives improve performance has been an important topic in the personnel economics literature (Lazear, 2000). Most of the literature has studied the use of incentives for workers or teams with relatively homogeneous tasks. In our setting, workers have heterogeneous, but complementary, tasks. Designing optimal incentives in such a setting is complicated. The system introduced by the bank is consistent with the notion that workers with tasks that contribute to profit should receive high-powered incentives, while multi-taskers should not (Bartel et al., 2016; Besanko et al., 2005; Holmstrom and Milgrom, 1991). However, differentiation of incentives has the potential to induce collusion among workers and more generally, quantity-based incentives carry risk in a setting such as banking where quality is important (Baker, 2002). We examine these issues.

Our empirical approach is grounded in the insider econometrics literature, a branch of personnel economics that has sought to use detailed knowledge of the firm to analyze the impact of modern HRM policies (Ichniowski and Shaw, 2003; Ichniowski and Shaw, 2012). Policies of interest have included incentive schemes, team work and task flexibility. A key outstanding issue in the insider econometrics literature is endogeneity bias in estimates of the impact of HRM and other reforms on performance. The bias arises due to unobserved differences in (i) the performance of organizational units or (ii) the marginal benefit of HRM practices. The first source of bias can be addressed with fixed effects esti-

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mation (if effects are indeed fixed over time) and some authors show that fixed effects effectively deal with all plausible sources of bias (Athey and Stern, 2002; Bartel et al., 2007; Ichniowski et al., 1997). Other studies do not address endogeneity at all or use fixed effects estimation without further evaluating its suitability. However, as we discuss in Section 4, mean- or first-difference estimation does not generally remove bias that is due to differences in the marginal benefit of HRM practices.

Methodologically, we advance the insider econometrics literature by using two complementary methods to address endogeneity bias: a particular instrumental variable (IV) approach and a generalized propensity score (GPS) approach (Hirano and Imbens, 2004; Imai and van Dyk, 2004; Imbens, 2000). The strength of our strategy is that if both methods yield similar results (as they do in our case) the results are more credible than results from either approach alone or from an approach that does not tackle endogeneity at all.

Our IV approach exploits the fact that all branches in our data set were subject to a common set of policy decisions at headquarters even though HRM reforms were implemented at different times and to a different extent across branches. This is different from other studies where the decision to implement new HRM policies was made at the level where it was implemented – firm-level in Ichniowski et al. (1997) or branch-level in Bartel (2004) and Bartel et al. (2011). In our case we can, for each branch, use information on the implementation of HRM reforms in branches that are observationally similar to construct instruments that approximate the strength of the policy shock, but are independent of the branch-specific benefits of these policies. While our dataset is somewhat unique in the sense that it comprises the universe of organizational units that are eligible for the HRM reforms that we study, our approach may be used with other datasets. Specifically, our method can be applied if organizational units (be they independent firms or affiliates) are subject to policy shocks that are exogenous at the level of observation and affect the propensity that an HRM policy will be introduced.

Using our IV approach we find that the introduction of sales staff with high-powered individual incentives contributes to the average sales productivity of branch employees. This effect is larger in large branches, where free-riding is a problem if there are no individual incentives, but it declines when the ratio of sales staff to other staff, who provide administrative and other services that are complementary to sales effort, becomes too large. However, we do not find that the HRM policies improve profitability, the product mix or loan quality. Overall, the results point to the effectiveness of the new organizational structure and bonus system in eliciting effort from branch staff. At the same time, the results raise specific concerns about the effect of differentiation in incentives.

Our results are robust within the context of IV estimation, which controls for *unobserved* heterogeneity by replacing, in the second stage, the actual adoption of HRM reforms by the propensity of a branch to adopt the reforms. An inherent weakness of the IV approach is that results may reflect structural differences between branches that correlate with the propensity for treatment rather than actual treatment (Blundell and Costa Dias, 2009). We therefore supplement our IV estimates with Generalized Propensity Score (GPS) estimates (Flores and Mitnik, 2013; Imbens, 2000). The GPS estimates control for selection on *observable* differences across branches. They represent estimates of the impact of the HRM reforms on branch productivity that are based on comparisons between branches with the same propensity for treatment but different actual treatment. The strength of the GPS estimates lies precisely in the area of weakness of the IV estimates (and vice versa), and because the results from both estimators are similar, they reinforce each other.

Finally, studies on the relationship between bank performance and foreign acquisition in emerging markets have estimated that foreign acquisition improves bank performance (Bonin et al., 2005; Claessens et al., 2001). The literature has argued but not shown directly that foreign owners improve performance *inter alia* by introducing modern management. Our paper provides concrete micro evidence in support of

this argument, while pointing to challenges faced in the implementation of new HRM policies.

In what follows we first discuss the bank and our data (Section 2). We next review related literature and empirical predictions (Section 3). Subsequently, we present our IV approach (Section 4) and findings (Section 5). We present further robustness tests in the form of GPS estimation in Section 6 and we conclude in Section 7.

2. Background and data

Banking in the CEE region has changed dramatically since the early 1990s when there were primarily universal, state-owned banks with an overhang of bad debts that were known for poor management and service (Berglof and Bolton, 2002; Buch, 1997). Today, all countries in the region have a modern banking sector and relatively well-managed banks with foreign ownership and a range of client-friendly products on offer.

The bank that we study is a leading financial institution in its market and has over 200 branches that serve retail and small and medium enterprise (SME) clients. Upon privatization in the late 1990s, a majority of shares were acquired by a West-European bank, which later purchased the remaining shares.

We have access to quarterly branch-level balance sheets and profit and loss statements covering the five-year period from 2003 to 2007. The data include a quarterly overview of staff for each branch, broken down by functions. The objective of the branches is to maximize the “sales” of deposits, loans and savings products to retail and SME clients. In the context of this paper, it is appropriate to think of branches as “outlets” rather than “mini-banks”. A branch’s ability to lend is restricted by rules related to the assessment of creditworthiness of borrowers but not by its intake of deposits – the loan-deposit balance is monitored at the bank level.

Following acquisition, the foreign owner introduced a range of organizational reforms, initially to improve governance, risk management and cost-effectiveness. We focus on the second phase of reforms during which the bank sought to improve the commercial orientation and client focus of the branches. The reforms had three key elements. First, there was an effort to improve client segmentation into high-value and regular clients.

Second, mirroring the segmentation of clients, the bank created a new functional structure. Under the old structure, there were differences in seniority, but function profiles were otherwise ill-defined (Fig. 1). In 2003 the bank introduced “bankers,” who focus on high-value clients within either the retail or SME market. Two years later, the bank created “advisor” functions. Like bankers, advisors are expected to focus on sales and client relations, but instead of engaging with specific clients, they specialize in specific products such as mortgages and contractual savings. The banker and advisor functions were not created all at once and we use variation in the number of bankers and advisors over time and across branches to evaluate the impact of the reforms. With the introduction of the banker and advisor functions, remaining branch staff was expected to focus on administrative and transactional services as well as sales of regular products. The bank created specific function profiles and training programs for both bankers and advisors and although most of the recruitment for these functions happened within branches, the process was perceived as a clear shift in the valuation of skills.

The third key element of the branch-level reforms involved the introduction of a new incentive system (Fig. 2). Before 2003, performance bonuses put a significant weight on branch profits, which are far removed from branch employees’ day-to-day activities. Under the new system, bonuses are largely based on performance towards sales targets. Regular branch staff receive a bonus of 10 percent of their regular salary if the branch as a whole meets 70 percent of its target. The maximum bonus is 40 percent of salary if the branch hits 200 percent of target performance. Advisors have the same bonus curve, but their performance is measured on the basis of a 70/30 weighted average of progress towards

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