Research Statement

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My primary research interests include Applied Microeconomics, especially Labor Economics and Economics of Inequality. The research focus can be summarized by my dissertation title *Tasks, Skills, and Wages in Labor Markets*. Utilizing Survey data on Tasks performed at work I aim to enhance our understanding of the concept of 'Skill' and how it translates into Wage differences. In contrast to conventional methods, relying on formal qualifications such as education or experience, emphasis on workplace heterogeneity offers novel insight into skill differences and varying levels of productivity.

In completed research I heavily utilize German Employment Surveys providing self-reported information on worker's job-related activities. In one working paper I compare this worker-level information with an online database, which is based on (commonly used) occupation-level data and assessment by labor market experts about occupation-specific requirements. Notably, I highlight the conceptual benefits of worker-level data in a simple model in which workers can earn efficiency gains by specializing in core tasks within their own occupation and validate this approach with various empirical tests. This insight is applied to the migration context in my *Job Market Paper* in which I decompose wage differences along the entire wage distribution. In this study I emphasize variation in interactive tasks as a key driver of the rising wage gap in Germany since the mid 2000s. These findings provide novel contributions as my work is the first to demonstrate that the comparative advantage of native workers in interactive activities extends occupational borders. Specifically, variation in task across workers accounts for up to 25% of the wage gap.

My current work picks up on my dissertation, emphasizing task specialization within occupations and thus workplace heterogeneity. One project complements task data with supplementary information on task-specific time allocation to estimate a Roy model in which workers choose an occupation based on a comparative advantage in core tasks. Observing the amount of time devoted to the accumulation of specific skills thus enriches models relying on human capital formation and highlights the importance of learning-by-doing mechanisms. In other research I combine task information with German administrative data. This study examines varying degrees of task specialization within occupations and its impact on the aggregate wage structure. Relatedly, I am working on a project in which I estimate the returns to the number of tasks performed at work in a twist to Adam Smith's proclamation of *Gains from Specialization*.

The overarching goal of my research is to provide a unifying task-based framework to assess the role of general-purpose versus job-specific skills in the formation of human capital, emphasizing responses to *Digital Transformation* and *Robotization*. A comprehensive model accounts for skills accumulated during adolescence and likewise throughout adulthood. Prior to entering an occupation, workers accumulate more general-purpose skills via education or inherent ability. Subsequently, specific skills acquired on the job become more relevant. In light of my previous work, I believe workplace heterogeneity is a key factor as workers and firms have specialized differentially

in response to technological changes and globalization. On the (labor) demand side, firms increasingly utilize robots that are connected to other machines and improve resilience to shocks (such as *COVID-19*), thereby expanding the range of tasks they can perform and displaying labor. At the same time, technological advancements induce productivity growth that favors skilled workers performing non-automated tasks. Hence, on the (labor) supply side, individuals respond by changing their human capital investments, adjusting to an increasingly automated world.

Novel data, such as the *International Federation of Robots* (IFR) database, offers new ways to incorporate differential adaption by industries. This, in turn, affects occupation-specific applications across industries and thus skill requirements which trickle down to differential adjustments at the firm-level. Along with improved access to high-quality administrative and survey data, these rich databases allow scholars to revisit old questions with new tools and likewise tackle new questions relevant to the current *Zeitgeist*. Over the course of 2021 I aim to apply for research funding to get access to the IFR database to expedite my studies at the intersection of automation and human capital. While I am interested in long-term effects, I strive to use this insight in order to analyze the short-term impact of *COVID-19* on the workplace. As the pandemic is poised to reshape labor markets and accelerate the trajectory of automation today, it is incumbent on the Economic profession to prepare the workforce of tomorrow.

My broad research interests transcend the scope of the task-approach outlined above. Prior to my Ph.D. studies, I examined Emerging Economies' motives for accumulating large amounts of Foreign Exchange Reserves and the relationship between capital flows and productivity growth. My general interest in the impact of technological change and its multi-faceted impact on economies worldwide is thus closely related to topics in *International Economics*. In the future, I expect to go back to the roots and do some work tied to Open Economy Macroeconomics in some capacity.

In terms of *Economics of Education*, I am interested in human capital investments throughout childhood. A promising literature focuses on non-cognitive abilities and experimental approaches to estimate causal effects on educational outcomes, highlighting the increasing importance of social skills. Other studies utilize genetic data to construct a so-called *polygenic score* and find this index to be associated with educational and labor market outcomes. I find this approach intriguing as it conceptualizes the rather abstract idea of inherent ability, commonly used in economic models. With respect to Education Policy, I have started a paper on the impact of immigration on learning outcomes of native youth in Germany. Due to data difficulties I have put this project on hold, but intend to continue in the future with other data. In a similar vein, I am interested in the impact of E-Verify, a US program aimed at curbing undocumented immigration, on education outcomes of affected households. First, however, I need to explore suitable data and am moreover on the lookout for fellow peers who would like to cooperate with me on these education-related projects.

Finally, over the course of my graduate career I have familiarized myself with *Machine Learning* Techniques. I believe the rise of Big Data and increased computational capacities allow these methods to augment traditional empirical methodology in Economics and enhance our understanding about the complexities of life. I anticipate that the projects outlined above, which place emphasis on both theoretical and empirical work, will remain as my primary focus of research for the foreseeable future.