

# Agricultural Productivity and Growth

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## 1 Summary

Between 1960 and 1977 Turkish GDP per capita fell from 73% of Greece, Portugal, and Spain to around 50% and remained at this level until very recently. In this paper we investigate the reasons behind this relative stagnation. We inquire whether we can isolate particular policies or features that may have been responsible for this experience. Many authors have focused on the role of institutions, human capital, and macroeconomic policies that may have hindered growth in developing countries. For example, Hall and Jones (1999) attributed most of the differences in output per worker to differences in institutions and government policies across countries. Acemoğlu, Johnson, and Robinson (2001) estimated large effects of institutions on income per capita. Recently, models of sectoral transformation have been emphasized in providing further insight into these differences. For example, Gollin, Parente, and Rogerson (2002) and Restuccia, Yang, and Zhu (2008) discussed the importance of the agricultural sector in accounting for the differences in income per capita while Duarte and Restuccia (2010) concluded that low productivity in services explains the lack of convergence across a large set of countries. In this paper, we examine the growth experience of Turkey through the lens of a multisectoral model and find that the main reason behind its relative stagnation was its low agricultural productivity growth. We provide some evidence that policies that discriminated against agriculture deserve special attention for understanding the low productivity growth in the Turkish agricultural sector.

The growth rate of GDP per capita in Turkey between 1923 and 2008 was 3.0%, but that rate fluctuated considerably over time. For example, from 1960 to 1977, GDP per

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capita grew at 3.8% while during 1977-2001 it grew at 1.6%. Despite the fact that the 1977-2001 period could almost be classified as a “great depression” based on the Kehoe and Prescott (2007) definition, it is the earlier period when the gap between Turkey and some of its peers widened. Indeed, in the 1960s and 1970s, Turkish per capita GDP significantly fell behind its peers, whom we define for the purposes of this paper as Greece, Portugal, and Spain. In 1960, Turkish GDP per capita was 73% of its peers. By 1977, this ratio had declined to 50% and continued to be around 47% in the 1980s and 1990s.

The divergence of income per capita between Turkey and its peers took place in a period when neither one of the peer countries was a member of the European Union and some of the fiscal and monetary policy indicators such as the share of government consumption in GDP and the inflation rate were not significantly different across countries. A striking difference, however, was present in their sectoral employment shares and sectoral productivities. In 1960, the share of employment in agriculture was 76% in Turkey, 57% in Greece, 44% in Portugal, and 42% in Spain. All countries experienced a decline in the share of agriculture over time. However, the decline was much slower in Turkey compared to its peers. By 2008, the share of employment in agriculture had fallen to 24% in Turkey, 11% in Greece, 12% in Portugal, and 4% in Spain. This indicates a dramatically slow de-agriculturalization of the Turkish economy relative to its peers. In addition, Turkish labor productivity, especially in the agricultural sector, was significantly lower than that of its peers. For example, average productivity growth in Turkish agriculture between 1968 and 1978 was 1.76%, while it was 6.80% in Spain. Turkey provides an interesting case to study as these differences help us isolate some of the key factors in generating differences in income per capita.

In this paper, we use a two-sector model to examine the reasons behind the low sectoral productivities, slow de-agriculturalization, and increased divergence of income per capita in Turkey relative to its peers. In our framework, labor allocation between sectors is driven by the differences in sectoral productivities as well as the income effect of non-homothetic preferences. We calibrate the model to the structural transformation of Spain between 1968-2005 and use it to understand the sectoral allocations in Turkey. We investigate if it is low productivity in agriculture or industry (or both) that is responsible for the slow de-agriculturalization and the low overall productivity in Turkey. We conduct a counterfactual experiment in which we equip Turkey with either the agricultural or the industrial productivity growth from Spain starting in 1968.

Our results indicate that if Turkey had inherited Spanish agricultural productivity growth from 1968 to 2005, de-agriculturalization would have been much faster and the growth rate of aggregate GDP per capita would have been much higher in Turkey. Inher-

iting Spanish industrial productivities, on the other hand, would not have contributed to the growth experience. Moreover, our results reveal that Turkey would not have fallen behind its peers had Turkey inherited the Spanish productivity growth in agriculture during the 1960s and 1970s. Similar results are obtained where sectoral productivity data from several other European countries are used in the counterfactual experiment. This result is due to the fact that many of Turkey's peer countries enjoyed much higher productivity growth in agriculture as opposed to the industry in this period. While Turkish productivity growth was lagging behind its peers in both sectors, it was particularly worse in agriculture.

Many authors, including Altuğ, Filiztekin, and Pamuk (2008), have focused on the role of institutions, low human capital, and flawed macroeconomic policies in hampering growth in Turkey. While all of those factors are surely important, our findings indicate that we need to look deeper into policies that have different effects across sectors and across time. We show some preliminary evidence that indirect policies such as import substitution and overvalued exchange rates that discriminated against agriculture in Turkey may have hampered the efficient use of intermediate inputs, resulting in lower agricultural productivity.