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**Article (Accepted version)
(Refereed)**

Original citation:

Rodríguez-Pose, Andrés and Hardy, Daniel (2016) *Firm competitiveness and regional disparities in Georgia*. *The Geographical Review*. ISSN 0016-7428

DOI: [10.1111/j.1931-0846.2016.12180.x](https://doi.org/10.1111/j.1931-0846.2016.12180.x)

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This version available at: <http://eprints.lse.ac.uk/67543/>

Available in LSE Research Online: August 2016

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Firm competitiveness and regional disparities in Georgia

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Abstract

The challenges to building firm competitiveness in post-transition economies are many, particularly as global trade integration intensifies. Intra-nation variations in firm competitiveness are also stark, highlighting the need for policies to overcome the legacy of pre-transition economic structures. Utilising data from Georgia's annual firm census and household surveys, this paper analyses the nature of the country's firm competitiveness – measured as labour productivity – over the period 2006-2012. The results of our empirical estimations reveal that although a large proportion of a firm's competitiveness is associated with its own characteristics (sorting and compositional effects), location-specific factors are also highly relevant. In particular, the extent of agglomeration, human capital endowments, and local expenditures (such as transport infrastructure investments), play a significant role in conditioning firm-level competitiveness. Given current endowments across regions, these findings highlight the attention that needs to be paid to building capacities in less-favoured areas, not only to ensure that trade integration does not further harm Georgia's less favoured regions, but also to make further progress in developing the country's private sector and fully maximise the export potential across its stock of enterprises.

Key words: Competitiveness; Productivity; Firms; Georgia; Transition economies

Introduction

Firms in post-socialist transition economies have experienced considerable challenges to developing their private sectors, building competitiveness and finding vital sources of long-term economic growth. Following the onset of democracy and the shift from centrally planned to market economies, upheavals to business environments have been massive, with wide-ranging implications. While, on the one hand, the coupling of globalisation and trade liberalisation offers unprecedented opportunities for newly established post-transition firms to broaden their base of trade, enter new markets and raise their competitiveness, open market conditions, on the other hand, also heighten the risk that firms – and by extension the regions where they are located – struggle to compete. Hence, poorer and often less dynamic firms and regions could be left to lag behind. If one of the possible outcomes of greater openness is to create pervasive and lasting inter-regional disparities the perceived benefits of trade integration may ultimately be undermined. Worse still, vicious cycles of decline may take hold, become embedded, and destabilize the economy as a whole.

There are two types of risk that prompt our close consideration of the ongoing processes of trade liberalisation in socialist transition countries: both loom large in Georgia. First, and our principal focus, is the potential impact of global integration on regional development and disparities in terms of the competitive performance of Georgian firms. Notwithstanding its small size, Georgia suffers from large and persistent regional disparities – a present and enduring source of political tension. Left unchecked, or if aggravated, greater levels of integration risks further marginalising peripheral, lagging regions. The result may be greater economic, social, and political instability (Williamson 2005; Brühlhart 2011; Rodríguez-Pose 2012). More specifically, the potential exacerbation of disparities through efficiency losses, agency problems, and increased territorial competition (Prud'homme 1995; Rodríguez-Pose and Gill 2005) are real concerns, with the literature expounding these issues as particularly relevant to low- and middle-income countries like Georgia (Rodríguez-Pose and Ezcurra 2010).

Second, is the tendency to generate large trade deficits, which in the case of Georgia have averaged in excess of US\$400 million per month in recent years. Having become an economy highly open to trade – its trade-GDP ratio has fluctuated between 60-70% over the last decade – it remains a concern that this deficit is driven by an increasingly concentrated export product mix, and non-tradeables in particular (Kuriakose, 2013). If this gap is to be closed, Georgia's firms will need to raise their productivity, become more internationally competitive, and export. This is an issue of special pertinence in light of the Georgia's future plans for decentralisation and export-led growth. More generally, with the country already lagging behind its regional peers (and, especially, Armenia) in a number of firm performance metrics – such as R&D output, innovation and entrepreneurship (Kuriakose, 2013) – these risks need to not only be better understood, but, in light of our analysis, real measures have to be implemented to overcome the barriers to Georgian firm competitiveness.

This research takes a step in this direction and seeks to analyse how local conditions, amongst a myriad non-local factors, affect firm competitiveness in different parts of Georgia. Such analyses need to consider how the connections between a firm's performance (measured as labour productivity), relate not only to a range of region-specific factors, but also the nature of the industry and each firm's innate specificities. In this paper, we therefore evaluate the extent to which the competitiveness of Georgian firms is conditioned by their location (i.e. place-based effects), controlling for the specific characteristics of each firm (i.e. sorting and compositional effects) and industry. The article begins by describing the state of regional disparities in Georgia, the relevant theoretical literature, and our empirical strategy, before focusing on the results of the analysis.

Georgia, the transition, and regional disparities

Following the dissolution of the Soviet Union, a number of fledgling transition states embarked upon a process of democratisation, institution building, and market-led

economic development. For many of these states moves to liberalise, privatise, and stabilise occurred rapidly, while in others, such as China, this process was more gradual (Qian 2002). For those in the former category, including Georgia, considerable literature points to the risks associated with dismantling established institutions rapidly before new ones are sufficiently embedded. Such a process can result not only in poor structural adjustment over longer time horizons (Murrell, 2005), but can naturally lead to poorer firm performance over both the short- and long-term.

For these rapid transition states, the immediate aftermath of independence brought a number of their economies to the brink of collapse (for a review of the first decade after transition see Campos and Coricelli 2002). Georgia was no exception. GDP per capita fell to 27% of its pre transition level almost immediately. As **Figure 1** shows, Georgia's performance was also one of the weakest in the region, faring worse than not only the Caucasus average, but also below that of the averages of fellow transition states in Central Asia, the Baltics, Russia, and Eastern Europe. A prolonged period of political and economic stagnation ensued for much of the 1990s and early 2000s, as moves towards economic stabilisation were interspersed with piecemeal structural reforms and growing tensions. This ultimately culminated in the 'Rose Revolution' of late 2003. However, following fresh elections and the implementation of a package of far-reaching and broad-based reforms in 2004, Georgia established some of the strong foundations needed for economic growth-led regional development. The economy has since recorded impressive GDP growth rates, peaking at over 12% in 2007, before falling considerably due to the domestic, international and conflict-based crises of 2008 – including mass-demonstrations, the global financial crisis, and the military conflict with Russia. The Georgian economy recovered from this period relatively quickly, growing 6% in 2012. Although still to return to pre-transition levels of GDP, the progress made has been considerable. This economic turnaround has not gone unnoticed. Significantly, in 2010, Georgia's reputation as an easy place to do business was recognised by the World Bank (2010).

The country was featured as a leading reformer in the Ease of Doing Business index.¹ Among other things, this has been a boon to economic output, foreign investment, and new business activities in the country.

[Figure 1 here](#)

Throughout this boom phase Georgia's firms have undoubtedly become more competitive. For example, the value of Georgian imports and exports has escalated considerably over the last two decades – exceeding US\$ 600 million and US\$200 million per month, on average, in 2013. However, despite the many positives accruing to rising national incomes and increased external trade, and potential negatives with regards to a growing trade deficit (reaching a high of 22% of GDP in 2008 – see **Figure 2**), what is more concerning are the spatial inequalities that have persisted – even tending to increase during periods of economic expansion. The presence of large internal differences is, however, by no means a feature unique to Georgia. Indeed, it is a feature common to many transition states, ex-Soviet or otherwise (Huber 2007). While capital city-regions have tended to benefit most from reforms, often becoming absolute political and economic centres in the process, peripheral and more sheltered localities have frequently been left to lag behind (Tondl and Vuksic 2003; Farole, Rodríguez-Pose, and Storper 2011). Similar patterns of regional disparities have been observed in numerous other transition contexts, including large economies such as China (He, Wei and Xie 2008), as well as in more comparable, small, transition states in Eastern Europe such as Slovakia (Banerjee and Jarmuzek 2009), Romania (Altomonte and Colantone 2008), and Estonia (Tatar 2010), as well as Kazakhstan and Uzbekistan in Central Asia (Lessmann 2013).

[Figure 2 here](#)

¹ This is not unambiguously accepted, however. Timm (2013) suggests that these accolades hide a multitude of potential negatives, including increasing interference in economic activities, infringement upon property rights, and the creation of uncompetitive business contexts, all unlikely to aid in economic and social progression within Georgia.

Disparities across Georgia's regions are reflected in a number of its characteristics (**Table 1**). Tbilisi's regional economy, for example, is home to approximately one third of the national population, responsible for half of Georgia's GDP, and has an output level twice the national average (and more than three times that of the most lagging regions). Kakheti, by contrast, is much more dependent on primary sectors – and is home to over 70% of Georgia's wine production – which partially accounts for its low position in Georgia's territorial hierarchy. Kvemo Kartli, and to a lesser extent Shida Kartli and Mtskheta-Mtianeti, are more industrial, attributable, perhaps, to their sharing of a border with the Georgian capital. In general, the most productive regions – those that have ascended the national income hierarchy – are those with the larger services (Tbilisi and Adjara) and industrial (Kvemo Kartli) sectors. The most unproductive are characteristically agrarian economies, or those with a high reliance upon the public sector.

Table 1 here

Although the described levels of inter-regional disparity are certainly large, albeit hardly atypical in such context, it is important to consider why the concentration of economic activity in specific regions is necessarily a bad thing, in general, and for socialist transition countries like Georgia, in particular? The innovation literature is replete with evidence linking spatial concentration with greater levels of innovation and, as a result, regional economic growth (Feldman 1994). Simultaneously, the New Economic Geography stresses the advantages to agglomeration (Fujita, Krugman and Venables 1999), a standpoint once ardently posited by the World Bank – see, for example, the 2009 World Development Report (WDR 2009) – where the need to promote urban agglomeration was seen as a necessary step to foster economic development in aggregate terms – i.e. regional disparities are of little concern in the wider context of development and that global integration and trade should be pursued in spite of its territorially unbalanced consequences. The problem is, however, that irrespective of what the aggregate performance of the national economy may suggest, unevenness in the distribution of economic activity will mean that some regions and their firms will be left to stagnate. For countries with socialist traditions, an enduring orientation towards their domestic markets (and economic

structure to suit), limited international links, and the slow adjustment of firms once sheltered from the rigours of competition, this transition process is littered with frictions that potentially present insurmountable barriers for certain firms to compete (Giannias, Liargovas and Chepurko, 2005).

The key focus of this paper is to analyse how the ability of firms to adapt and thrive in a globally competitive trade environment is constrained by the characteristics of the region in which they operate. For Georgia, where economic cleavages are significant, firms located in the better-connected regions – Tbilisi in particular – are likely to benefit from better opportunities to trade, and become more competitive as a result, certainly relative to firms located in more remote territories. From this viewpoint, unevenness in the distribution of economic activity reflects a classic confrontation between the merits of economic efficiency versus (territorial) equity. If left unchecked, the tendency for a growing inequality of opportunity between regions may result in greater polarisation between stagnating rural regions and more vibrant urban cores. In the longer term, not only could these disparities undermine the performance of the national economy, but may foment internal social and political tensions, become a destabilising force, and ultimately threaten the very viability of transition economies as cohesive entities (Anderson and Pomfret 2004). This is all the more important where these disparities overlap with the locations of different cultural and ethnic groups (Kanbur and Zhang 2005).

Analysing firm competitiveness and regional disparities in Georgia

A 'new conventional wisdom' advances place competitiveness as a central concern for regional economic development and policy (Buck *et al* 2005). The collective ability of firms to compete is repeatedly advanced as the foremost determinant for explaining the differential economic performance across regions and between countries. Increased global trade, by raising the competitive pressures felt by firms, demands greater efficiency, and thereby incentivises investments in R&D and new technologies. The majority of any given firm's ability to meet these challenges can be explained by its inherent characteristics, as well as by industry-wide

characteristics. Nevertheless, location-specific factors may also play an important role in firm-level competitiveness. From an empirical standpoint, the first two factors – firm- and industry- specific aspects – have received considerable attention, most often in terms of export performance, survival, competitiveness, productivity, FDI, and innovation (Geroski 1995; Roberts and Tybout 1997; Bernard and Jensen 2004; Boermans and Roelfsema, 2015). It is, however, becoming increasingly evident as better regional data become available that the characteristics of host regions are also highly significant, with a strong bearing upon the development trajectory of local firms, which, in turn, feeds back into the aggregate performance of the region as a whole (Bristow 2010). It is these factors – the relevant place-based characteristics that enable firms to prosper, and consequently shape the evolution of regional disparities – that this research casts a spotlight over, as specified in the following model:

$$\ln(FIRMCOMP_{irt}) = \beta_1 FIRMCHAR_{irt} + \beta_2 REGCON_{it} + \mu_i + \varepsilon_{it}$$

where $\ln(FIRMCOMP_{irt})$ is the logarithm of the competitiveness of firm i , in region r , at time t . $FIRMCHAR_{irt}$ represents a matrix of firm-specific characteristics which may affect competitiveness at firm level. $REGCON_{it}$ represents a matrix of place-specific conditions associated with the region in which each firm operates.

To conduct our analysis we draw upon the Georgian Industrial Census, the Georgian Integrated Household Survey and supplementary data provided by the Georgian National Statistics Office (Geostat) to construct an extensive array of firm- and regional-level variables. The data are sub-divided into Georgia's 9 statistical regions as employed by Geostat (which excludes Abkhazia)² and represents annual data covering the time period 2006-2012. Due to the often-low quality of data from such contexts, we cleaned the dataset in order to remove extreme outliers, particularly

² The 9 regions include Tbilisi (1), Adjara (2), Guria (3), Imereti, Racha-Lechkhumi and Kvemo Svaneti (4), Kakheti (5), Shida Kartli and Mtskheta-Mtianeti (6), Samagrello-Zemo Svaneti (7), Samtskhe-Javakheti (8) and Kvemo Kartli (9). Data limitations force the noted aggregation of regions 4 and 6, consistent with the methodology employed by the Georgian Statistics Office. The Autonomous Republic of Abkhazia is excluded from the analysis due to a lack of data.

those with significant fluctuations in turnover across years, as well as firms with data irregularities, such as negative turnover values or multiple changes in the reported sector of activity or region. The resulting dataset is an unbalanced panel of 13,958 firms across 43 NACE (revision 1.1) 2-digit sectors, covering both industrial and service-based firms. Table 2 provides a correlation matrix of the key variables.

[Table 2 here](#)

Firm competitiveness

Measuring firm competitiveness is a challenging undertaking, notwithstanding the data limitations frequent in transition contexts. First of all, we interpret competitiveness as a poetic way of saying productivity and calculate a simple measure of labour productivity as gross valued-added (GVA) per worker. Although measures of competitiveness – labour productivity, as utilised, or total factor productivity – are far more meaningfully analysed in the manufacturing sector, in our analysis we seek to take advantage of our full sample and include service sector firms. We, nevertheless, omit firms in the agricultural, mining, and public services sector, as is typical in the literature. We employ sector dummies to control for cross-sectoral variations. As presented in **Figure 3**, the differences in productivity are considerable across regions – even accounting for industrial mix – as is best exemplified by the five-fold performance differential between the capital, Tbilisi, and Guria, a lagging coastal region. **Table 3** provides an indication of these differences across firms of different sizes. Although a few large firms are highly productive in Georgia it is actually small sized firms that, on average, include some the most productive and dynamic firms in Georgia. There are two dimensions to this observation. First is that you might expect larger firms to benefit from scale economies and lead in terms of productivity. However, the state of bankruptcy legislation in Georgia may be a partial explanation for this. Former state owned enterprises, many of the largest firms in Georgia, continue to operate in highly inefficient states – highly indebted, overstaffed, poor infrastructure, corrupt – and, despite major reforms, are yet to be liquidated or significantly restructured (Özsoy and Kubetova 2006). Second is the presence of a large shadow economy, which may

bias results in territories where barriers to legitimate business are at their most pervasive. Nevertheless, the data represent the most comprehensive available, and despite these limitations offer the best opportunity to study the firm competitiveness landscape in Georgia.

Figure 3 here

Table 3 here

Finally, a note on our choice of labour productivity as our indicator of competitiveness. For the most part we opt for this simple measure due to the nature of the data and the lack of more sophisticated measurements. However, as a robustness test, we also contrast the results of the productivity analysis with a number of alternative measures of firm competitiveness, including Total Factor Productivity (TFP) for a limited sub-set of manufacturing firms using the Levinsohn and Petrin (2003) method,³ a firm's market share, and profit per worker. These alternative measures are omitted from the presented analysis to conserve space as they closely corroborate our focal labour productivity findings.

Firm-level controls

Firm size (turnover), ownership type (public or private), capital intensity and female employment share are included as firm-specific controls. Each helps to explain a considerable amount of the observed differences in labour productivity across regions. The capital intensity variable is possibly the most indicative. It shows that the geography of the average capital intensity of Georgian firms, perhaps unsurprisingly, follows a similar pattern to that of productivity. Although the assembled variables represent the best available to us, we do acknowledge that important additional factors, such as the export-orientation and age of the firm, are

³ i.e. to overcome the potential bias evident in OLS productivity estimates, we instrument using intermediate inputs - materials and energy expenditures. However, insufficient data on various firm inputs – including firm investments which precludes computing TFP via the Olley-Pakes method – this imposes strong limits on our sample size. We therefore prefer to present the results of the analysis using the simpler measure of labour productivity, controlling as best as possible given existing data for cross-sectoral variations and capital intensities.

notable absentees. Data limitations prevented their inclusion and our results should be interpreted accordingly.

The role of territory

The economic geography literature has forged strong linkages between geographical space and the performance of regions and firms, largely in terms of attributes such as export performance, competitiveness and innovation. In addition, the 2009 World Development Report emphasizes the range of structural, place-specific and ‘softer’ government and institutional factors that are instrumental in shaping the evolution of disparities between regions. The qualities of specific places, such as the particularized benefits of agglomeration and the amassing of a critical mass of skilled workers and knowledge-intensive activities are well studied, featuring heavily in contemporary research on firm competitiveness (Malmberg *et al* 2000). Less common, however, is analysis of the range of regional attributes that potentially influence the competitiveness of firms. Our aim is to uncover some of the key location-specific attributes that affect firm competitiveness, which we broadly decompose into two categories, pure location factors (so-called first-nature geography) and second-nature geography.

First-nature geography

The literature concerning the geography of globalization recognizes that natural, physical advantages, including the natural environment, shape proximity between economic agents and the evolution of regions as productive spaces (Ellison and Glaeser 1999; Beeson *et al* 2001). The variety of different first-nature features, such as climactic conditions, ease of access – often linked to a regions proximity to the coast and waterways and physical barriers such as mountain ranges – as well as other natural resource endowments, mean that it is more or less self-evident that the type and prevalence of economic activities pursued will vary across space (Ottaviano and Thisse 2004). Some factors raise the transport costs associated with conducting trade [such as being landlocked or obstructed by a mountain range (Rappaport and Sachs 2003)], which may affect the competitiveness of firms

sensitive to these disadvantages (Ghemawat 2007) and inhibit access to distant domestic and international markets.

We employ two indicators to measure the significance of pure geographical advantages for each region. The first, 'ruggedness', represents a measure of topographic variation, generated by calculating the coefficient of variation of elevation across each region. Georgia is not only a very mountainous country, with several ranges of the Caucasus that carve its territory, including the Likhi Range which divides the country into an eastern and a western half. This variable, therefore, is used to proxy for a region's accessibility to inter-regional, as well as international, trade through its influence on transportation costs and travel time. In addition, a measure of regional climactic variability is employed to proxy for advantages in terms of agricultural potential. After trialling several variations pertaining to average temperatures, sun-shine hours and rainfall, each producing similar results, we settled upon average July rainfall for the presented analysis. The variables indicate that Georgia's climate varies considerably, across different elevations and in line with a regions proximity to the Black Sea. We also considered additional variables, such as the proximity to Georgia's short coastline and border effects associated with Georgia's neighbouring countries, using dummy variables. Both are omitted from the presented analysis, The former because it correlates highly with the aforementioned climactic variable, while the latter in the interest of a parsimonious baseline model. In any case, their inclusion neither proved significant nor altered the sign and significance of the main results.

Second-nature geography

First-nature features, whilst still relevant, potentially play an increasingly subordinate role to the geography of interaction between economic agents. An extensive literature documents the importance of agglomeration economies and dense networks of interaction between economic agents as fundamental drivers of firm competitiveness and regional growth (Marshall 1890; Fujita and Thisse 2002; Duranton and Puga 2004). Generally, densely populated areas are associated with higher productivity and innovation, driven by a greater probability of interaction

between proximate firms and individuals (Glaeser *et al* 1992; Ciccone 2002). This is particularly beneficial for the exchange of ideas and the diffusion of new technologies, benefitting firms that are highly sensitive to, and reliant upon, the external environment for knowledge acquisition (Duranton and Puga 2001). We include a population density variable to indicate the potential for efficiency gains and knowledge spillovers due to the increased probability for more frequent interactions between proximate individuals and within dense urban areas (Malmberg *et al* 2000). However, excessive density can also impose costs on the regional environment by creating transactions costs in terms of transport network congestion and place strain on shared resources, such as power outages (Krugman 1991).

Two more specific conceptions of externality are associated with the industrial composition of a particular place, and are constituted by what are known as 'localization' and 'urbanization' economies. The notion of localization refers to the positive externalities derived from the concentration of similar activities in space, such as co-located firms engaged in similar activities. We measure the extent of localization as the level of own-industry regional specialization for each firm (i.e. the total employment in firms in sector j in region i as a % of total employment in sector j). This is a relative measure that weights each of these shares by the national average for each sector. In general, localisation economies refer to static, co-ordination and network benefits between firms that share similar knowledge bases (Henderson 1988), and dynamic externalities related to knowledge spillovers, increased competitive pressures, and the deepening of knowledge resources and skills in the locality. Greater levels of specialization further benefit the performance of firms by enhancing the matching between large local pools of skilled workers (Glaeser and Maré 2001). As a region's specialised profile evolves, institutional externalities may also enhance the local business environment for that particular sector. Formal institutions, such as public services, may become more efficient in supporting and serving the needs of specialized firms. The co-evolution of informal institutions, including new social conventions and networks, may facilitate

knowledge spillovers and lower transactions costs, creating virtuous circles that raise the competitiveness of local firms.

Urbanization economies, by contrast, pertain to the benefits derived from a dense and diverse industrial structure. Where localization is assumed to deepen knowledge bases, providing benefits to firms in closely related sectors, urbanization broadens the local knowledge stock and provides a richer knowledge mix. This provides a basis for more diverse interactions and increases the potential for radical innovations across less-related sectors (Jacobs 1969). To capture the extent of potential urbanization we use a Herfindahl-based measure of industrial diversity, calculated as follows:

$$DIV_{rt} = 1 - \sum_i s_{rst}^2$$

where

$$s_{rst}^2 = emp_{rst} / emp_{rt}$$

Where industrial diversity (DIV_{rt}) is equal to one minus the sum of the squared employment shares in each region (r) for each sector (s) in each year (t). The diversity index measures the sectoral mix of the entire regional economy and achieves a minimum value of 0 when total regional employment is concentrated in a single sector and increases with higher levels of economic diversity. Although relatively high levels of diversity are evident throughout Georgia, the highest levels are present in the Kvemo Kartli and Imereti, Racha-Lechkhumi and Kvemo Svaneti regions. For Kvemo Kartli in particular, this result may suggest the importance of its proximity to Tbilisi, becoming a destination for firms, such as large manufacturing plants, to relocate to avoid the high costs and congestion in Tbilisi, whilst maintaining access to the largest market within Georgia.

Other regional attributes, some linked to agglomeration, are of fundamental importance to the competitiveness of firms within a given regional context, yet receive much less attention in the literature. Factors related to the local labour market, the business environment and general investment climate, as well as softer,

socio-economic features, such as the institutional setting and the government policy sphere, may also influence the ability of firms to trade, grow and compete.

Labour market

The quantity of qualified labour, the unemployment rate and the level of income with each region are likely to have significant implications for the competitiveness of firms (Scott 1988; Backman 2013). We construct indicators for the proportion of the economically active population with post-secondary and higher education, to represent the quantity of skilled human capital available to firms, the unemployment rate using the 'strict' ILO criteria, and the median household income in each region. Each indicator reveals distinctly different geographical patterns. Although Tbilisi is clearly a key centre of skilled employment and high incomes, the proportion of highly educated inhabitants is the country's lowest and the unemployment rate is more than double that of the other regions in Georgia (see **Figure 4B**). Focusing on incomes alone, the data reveal a distinctive East-West divide, which – with the marked exception of Tbilisi – favours the regions in closer proximity to Georgia's Western coastline and to Russia. This is an indication of the potential advantages of a coastal and more accessible location on the Black Sea for tourism, trade, and transportation. These differences in regional patterns, particularly with respect to incomes, unemployment and average labour productivity levels, suggest that differences in regional labour market conditions, such as variations in labour demand and impediments to the flows of labour and capital, shape the variation we see in the ranking of regions, as well as the level of regional disparities.

Business and investment climate

A sound business environment and investment climate are critical to competitiveness. We assess a number of relevant features. First, we analyse if many entrepreneurs and small firms – proxied as the proportion of regional employment in SMEs (fewer than 250 employees) – may be reflective of a region that is both dynamic and adaptable (Chinitz 1961; Glaeser and Kerr 2009) - smaller firms tend to play a bigger role in poorer, less productive regions. Large knowledge intensive (KIS) and/or high technology (HTM) sectors may foster knowledge spillovers and learning

externalities that benefit the regional system as a whole, measured the proportion of employment in local firms categorized as active in KIS and HTM sectors.⁴ Mapped in **Figure 4C**, it is interesting to note that although Tbilisi suffers from a proportional disadvantage in terms highly educated workers, the absolute size of its skilled labour pool, among other things, means that the capital is able to be dominant in terms of active KIS and HTM firms. Finally, we assess the significance of the investment climate by analysing the level of per capita private sector investment in each region. **Figure 4D** shows us that Tbilisi is the private investment capital, but also that proximity to the capital drives investment to nearby regions, such as Kvemo Kartli.

Social factors

The presence of significant minority population groups and high incidences of poverty may have significant effects on the productivity of individuals and firms. Minority groups may be socially, economically or politically marginalised, and face greater barriers with respect to labour market access and in the acquisition of skills. In Georgia, significant minority groups are located in the South and Western regions, those bordering Azerbaijan and Armenia, and particularly the regions of Samtskhe-Javakheti (51% of Armenian nationality) and Kvemo Kartli (53% of Azerbaijani nationality). The incidence of poverty, measured in terms of the proportion of the population below 60% of median consumption, exhibits a relatively strong Eastern bias, with the exception of Tbilisi and Guria, reaching up to 36% of the population in the Kakheti region (**Figure 4E**).

Decentralisation and local expenditures

With an ambitious strategy for decentralisation and the strengthening of government at the regional level on the immediate horizon (State Strategy for Regional Development 2010–2017), we analyse a range of governmental expenditure variables to assess the extent to which current financial structures serve

⁴ KIS and HTM sectors include: KIS (NACE codes 64, 72, 73) and HTM (NACE codes: 24.4, 30, 32, 33)

to exacerbate or reduce regional disparities in firm competitiveness. The aims of these reforms include moves to strengthen democracy, increase transparency, and boost efficiency in the delivery of public goods, as well as to invoke greater participation by the Georgian population in decision-making. We do caution however, that the annual expenditure data available are highly aggregated, making it difficult to assess the impact of specific public investments focused on, for example, developing infrastructure.

The leading regions of Georgia tend to enjoy the highest levels of per capita public spending (see **Figure 4F**). We observe considerable differences in per capita expenditures across regions, with four- and five-fold inter-regional disparities in per capita terms between the highest funded (Adjara and Tbilisi) and lowest funded (Kakheti) regions. In addition, the regional patterns differ according to the core component of regional public expenditure, which we are able to group into subsidies, social benefits, transport, and education. Where per capita transportation expenditures (**Figure 4G**) are particularly high in Tbilisi and Georgia's leading Western regions – Adjara in particular – education and social expenditures appear to be more evenly distributed, with some intermediate and lagging regions ranking highly. Social expenditures, in particular, are higher in the most lagging regions, perhaps where you would expect to find the most need. However, the overall balance tends to place upward pressure of existing disparities, with Tbilisi consistently outspending all other regions in per capita terms.

Spatial spillovers

An additional theme often stressed in the economic geography literature is the role of spatial interactions and spillovers between regions, which may create mutually reinforcing external effects (Ottaviano and Thisse 2005) and mean that the competitive environment faced by firms is influenced by not only by its regional endowments, but potentially by the cumulative endowments of the regional system as a whole. For a country like Georgia, with a dominant urban core, regions in closer proximity to this leading node may benefit from important inter-regional externalities and spillovers. Moreover, regions along Georgia's Black Sea coastline

may benefit from lower transactions costs to trade and exporting. We incorporate and test for the presence of these potential spatial spillover effects by taking the spatial lag of each variable to assess the impact of inter-regional interactions and spillovers on local firms. This complements our examination of the specific characteristics of the host region on firm competitiveness with an examination of the influence of the same characteristic in neighbouring regions that may flow across intra-national borders. We apply a spatial weights structure of first order contiguity, which, due to the topographic, linguistic, cultural and institutional differences between Georgian regions, likely represents the extent of spatial interactions across regions, and may in some cases even preclude them, becoming region and country-level constraints (Branstetter 2001).

Additional methodological remarks

To give a sense of the relative magnitude of the determinants of firm performance we first specify a multilevel model that structures the data in such a way that we can gain some insights into the drivers of labour productivity in Georgian firms by calculating variance partition coefficients at different levels (i.e. factors at the level of the firm, industry and region; see **Table 4**). In model 1, we find that approximately 8% of the variation in firms performance is attributable to region-level characteristics. Model 2 suggests that approximately 11% of this variability is ascribed to sector-level factors. When structured with both region-level and sector-level components, the multi-level analysis indicates that 5% of the variability in firm labour productivity is attributable to region-level factors, 13% to sector-specific factors and the remainder, 82%, a function of firm-level differences. Thus, although the region plays a slightly subsidiary role in terms of its association with firm performance, it is nevertheless an important factor that deserves close scrutiny. If Georgia is to continue to grow and become a bigger player in global trade it is necessary to maximise the performance of firms in all available areas.

[Table 4 here](#)

For the remainder of our analysis we structure a panel data model, as opposed to the multi-level model, which does not perform well in our more detailed analysis.

We therefore proceed using a panel data model and employ and compare fixed- and random-effects specifications. While the former absorbs time-invariant factors specific to each firm, such as the entrepreneurial talents of the owners, and also the self-selection of clustered firms which we are unable to measure directly, the latter is necessary in order to model the impact of time-invariant factors, such as the impact of first-nature geographical features. Region and sector dummies (4 digit NACE) are included to control for time-invariant features related to the place and industrial activity. Importantly, as our data spans the 2008 crises years, both estimation methods incorporate year-dummies to control for macroeconomic shocks, along with the use of robust standard errors, clustered at the region–sector level. We present the generalized version of the Hausman statistic, the Sargan-Hansen test, in order to assess the preferred specification in each instance.

Finally, due to a high incidence of multicollinearity between regional-level variables (as seen earlier in Table 2) we run a series of cascading regressions. This modelling strategy first sets out a basic model, which includes all available firm-specific characteristics and a set of core regional variables chosen to represent the physical, first-nature geography, and agglomeration factors – this forms the baseline model. Subsequently, we then examine several thematic sets of regional factors for their association with firm competitiveness. Coefficients are interpreted as conditional correlations.

Empirical results

Baseline model

Larger firms, higher capital intensities and private sector-ownership all prove to be significant and positively associated with our measures of firm competitiveness (**Table 5**). Female participation rates attain a negative coefficient. We suggest this reflects the relative differences in gender composition between manufacturing and service sector firms, where productivity tends to be higher in the former, and also within sectors, such as a potential sectoral bias in manufacturing, where female

participation tends to be highest in more labour intensive activities (e.g. apparel). These firm-level effects remain qualitatively unchanged throughout the remaining regressions.

[Table 5 here](#)

In regressions 3 and 4, we introduce the agglomeration indicators, namely localisation, urbanisation, and density. Localisation economies are indicated to be important for firm competitiveness in our random effects models. Firms active in regions with existing clusters of firms and employment in the same industry benefit from a skilled, specialized local labour pool, and may well benefit from knowledge spillovers from competitor firms, and from a combination of intra-sectoral cooperation and competitive rivalry. The urbanisation or diversity variable achieves a positive sign, consistent with the Jacobian externality thesis that indicates the potential benefits from local inter-sector spillovers that may be important for more radical forms of innovation and productivity enhancing ideas across sectors, but is statistically insignificant. On balance, the results suggest that the benefits of localised specialization are of greater importance to Georgian firms. Surprisingly, density is negatively associated with labour productivity, but is statistically insignificant. This result may be a consequence of strong linkages between each of our measures of agglomeration, which may be difficult to disentangle empirically. Indeed, if included individually, each attains a positive sign and significance.

Regressions 5 and 6 complete the baseline specification with the inclusion of spatial spillovers for the region-level variables. Both the regional average values of industrial diversity and density are negatively associated with labour productivity, however only the spatially weighted diversity indicator attains significance in the random effects specification. This suggests that the drawbacks to locating in regions neighbouring large agglomerations outweighs the benefits of any potential spatial spillovers. In a small country like Georgia, it appears that a firm's competitiveness, and likely the performance of the regional economy, benefit from large and dynamic regional economies supported by agglomeration – and principally localization – economies.

The final two columns of the table include the two first-nature geography variables. Regions with a more rugged topography face greater challenges associated with sustaining dense built environments, central to fully benefit from agglomeration economies, and bear increased transport costs, which are likely to be detrimental to trade and firm competitiveness. High ruggedness values, particularly associated with high elevations among the various ranges of the Caucasus Mountains, divide the Georgian regional landscape and create natural barriers that shape the main trade routes and thoroughfares. As anticipated, this factor is negatively associated with competitiveness of firms, however this result is statistically insignificant. The alternative control, average July rainfall, is employed as a measure of climatic conditions, which varies considerably in Georgia, and is also negatively associated with firm competitiveness, albeit insignificantly. Together this suggests that although first-nature geographical factors likely played an important part in the structure of the Georgian economy, the competitiveness of modern Georgian firms is most likely to be associated with a range of second-nature geographic factors. As Georgia continues to modernise and raise competitiveness, this is only likely to continue.

[Table 6 here](#)

Labour market variables

Regions with higher shares of highly educated workers provide a boost to the competitiveness of local firms. Proximity to regions with higher endowments of skilled workers, however, does not appear beneficial, suggesting there is no possibility of regions free-riding on the human resources of their neighbours. This implies that the absence of a local, skilled population is a fundamental handicap for the performance of local firms, which cannot be easily compensated by, for example, attracting skilled commuters from nearby regions. Alternative research has also highlighted that, although more Georgians have attained higher education in recent years, skills poorly align with the demands of local industry, hindering competitiveness (Kuriakose, 2013). Further, high-income regions appear to be where Georgia's most competitive firms are to be found. Neighbouring wealthy regions,

however, are found to be detrimental to competitiveness. Income disparities likely motivate Georgia's highest skilled to migrate for better, higher paid opportunities.

Higher rates of unemployment are negatively associated with firm performance, albeit insignificantly. Spatial spillover effects, however, are detrimental for the labour productivity of firms. A possible explanation for this result is influence of the capital, Tbilisi. In spite of Tbilisi's prominence as the national centre of business and employment, it has the highest rates of unemployment by some considerable margin. Following the end of the economic boom period in 2007, substantial downsizing in the public sector was not fully absorbed by the private sector, adding greatly to unemployment. Rural-urban migration has also exacerbated this trend. In addition, the city is still likely to be a major draw for the most highly skilled workers, denting the productivity of firms in neighbouring regions. However, some caution should be exercised when interpreting the unemployment data. Due to the way in which the Georgian statistics office records instances of self-sufficient farming as self-employment,⁵ potentially producing low estimates for unemployment in largely rural regions. For example, Guria, Georgia's least productive region, has some of the lowest unemployment rates, which may not be a true reflection of the employment situation as many of the 'employed' are likely absorbed in subsistence agriculture or related temporary, self-sufficient, or informal work, but recorded as employed.

Social factors

Broadly, we find a consistent negative association between social disparities and firm competitiveness, with factors such as the large ethnic minority populations (generally along the Southern border of Georgia) and high incidences of poverty all associated with low labour productivity. These findings likely do not reflect drawbacks associated with social issues directly, certainly in any causal respect, but rather hint towards a lack of other resources and endowments, such as agglomeration economies and good institutions. Ethnic and cultural tensions, and

⁵ For example, heads of households engaged in (often subsistence) agriculture are recorded as 'individual entrepreneurs', and family members as 'unpaid family business workers'.

the marginalisation of particular ethnic groups, including clashes between *de facto* independent states within Georgia are, however, likely to be critical for an affected region's economic performance and development.

Business and investment climate

Concentrations of knowledge intensive (KIS) firms do not seem to influence the labour productivity of Georgian firms. Whilst clusters of knowledge-intensive firms form the backbone of innovative places globally, suggesting that policies able to identify and support emerging clusters may be a major factor to foster development and raise productivity, Georgian regions may be lacking in other areas necessary for these effects to be realised. For example, as a World Bank report into private sector development in Georgia states, not only “R&D is limited, even among high-growth firms [...] there is virtually no industry-research collaboration” (Kuriakose, 2013, p.60) and “despite various education reforms, a skills gap remains between the skills of Georgia's labor force and the needs of the enterprise sector” (ibid, p.58).

The share of employment in SMEs - generally used as a proxy for vibrant, competitive and entrepreneurial business environments - is negatively associated with firm performance. However, as manufacturing firms comprise a significant proportion of the firms in the dataset, it may simply be the case that size matters most for labour productivity – as one would expect to be the case – and that economies of scale predominate. Moreover, as noted by Christie (2008), the presence of a large shadow economy and the relative scarcity of new and emerging medium and large firms (the restructuring of existing large firms is a separate issue) may contribute to the continuing presence of an excess of relatively inefficient SMEs. Many of these SMEs would otherwise have “disappeared or been forced to improve” in its absence (p. 21)”. As such, as SMEs tend to be at their most prevalent in Georgia's less productive regions, these sorts of barriers to growth – also typically linked with corruption – are likely to represent glass ceilings to firms becoming large.

Although we would have expected to find regional levels of private investment as clear assets for a firm's competitiveness, our results prove inconclusive. In this respect is most likely that firm-level investments are the key driver of performance,

linked to greater levels of capital intensity, and that firms are unable to benefit from the investments of others. Considerable investments in restructuring, as well as the noted inefficiencies in large unreformed firms, may also be major factors driving this finding. Many of Georgia's largest firms – those with the greatest capacity to invest in infrastructure, new technologies, and other capacity/productivity enhancing areas – are in need of substantial restructuring, and are a major concern for future competitiveness. Large, productive firms will be needed to drive Georgia into a more internationally competitive state. To create the best conditions for these firms to thrive inefficient institutions need to be overhauled, terminal and unproductive firms liquidated, and truly productive firms instated in their place to engender growth and foster social and economic development.

Decentralisation and regional budget expenditures

Total regional expenses per capita are strongly associated with firm competitiveness. When we analyse the components of this spending, we find a range of factors that are correlated with our competitiveness measures. Core components including transportation expenditure, subsidies, and social protection spending, are all positively and significantly associated with firm performance. On subsidies specifically, this may suggest that governmental structures of support and incentives in place for firms may yield some productive benefits. However, lacking detailed information on the nature of subsidies spending within regions, we are unable to test this claim. In contrast to the above, we fail to find a positive link between education spending and firm performance, however, as the costs of education are likely to vary widely per head, for instance remote regions are likely to receive higher spending per head than schools in large agglomerations, this should be interpreted with caution. Moreover, as illustrated by Chankseliani (2013), rural disadvantage in education is a concern – 81% of university students are from urban areas, which constitute just over half the population – with an even wider urban-rural divide in the most prestigious higher education institutions in the country. In the long term this can only serve to curb the aspirations of the rural youth and to further exacerbate backwardness and regional cleavages for rural areas. Finally, spatial

spillovers appear negligible in the majority of cases, again suggesting there is no possibility of free riding on neighbouring resources.

Collectively, the results tend to stress that current major components of regional public expenditure serve to sustain, and even enlarge, existing disparities between regions. Although some of the regional discrepancies may simply reflect differences in costs, related to physical geography and inherited infrastructure and facilities, differences may also point toward bias in bargaining practices for finance and the types of allocation mechanisms in place. If these mechanisms are just historical artefacts, and do not adequately reflect the current needs and realities of the regions, the prevailing system may simply perpetuate territorial imbalances. In all, the results tend to suggest that the current decentralisation programme needs to confront a range of real regional concerns if it is to create a more enabling environment for firm to compete and trade domestically and internationally.

Concluding remarks

Georgia's recent economic growth performance and increasing participation in international trade highlights the significant potential to further modernize and become an internationally competitive economy, with firms equipped to meet these competitiveness challenges. The country has many assets, including a well-educated workforce and strong export industries – in areas such as viticulture/winemaking, and mineral extraction, among others, features you would expect to see within a country at a significantly higher stage of development (Jackson 2004). However, in spite of its progress, Georgia remains one of the lowest income countries in Eastern Europe and Central Asia. Persistent territorial disparities, high levels of poverty, a high incidence of rural subsistence agriculture, and urban unemployment highlight the underlying economic, social, and political challenges that threaten to stall the future development of Georgian regions (Japaridze 2010; World Bank 2013). Significant reforms that address the needs of all regions are necessary if Georgian firms are to modernize and compete more widely, and also for Georgia to begin to reduce the trade deficit that is being accumulated.

In light of the analysis, there is considerable likelihood that Georgia's growing trade openness has affected firms located in different regions in different ways. Although a considerable proportion of an individual firm's competitiveness is associated with sorting and compositional effects – related to its own specific characteristics – important place-specific effects are also highly relevant. The analysis highlights that local conditions, such as local expenditures, transport infrastructure, and human capital endowments in particular, affect the competitiveness of Georgian firms. Thus, given the current endowments across regions, significant attention will be needed to building capacities in less-favoured areas, if global trade is not to further harm firms located in less well-off regions of Georgia. By targeting gaps in infrastructure provision, and helping marginalized regions to access larger domestic and international markets, firms can begin to raise their standards and benefit from scale economies and lower transactions costs, raising their capacity to rise to global challenges. Our analysis also highlights that job creation, better alignment between education and the local needs of enterprises, and support for small firms should be a priority, particularly in areas where unemployment is high. These findings combine well with existing research into entrepreneurship and innovation in Georgia (Kuriakose, 2013). Although, currently, small and medium sized firms are some of the most productive in the country, they may also be those that are most sensitive to their external environments for knowledge spillovers and trade opportunities – especially in light of the rather limited (if any) investments such firms make in R&D (in contrast to regional peers, like Armenia). The positive externalities associated with this process can then help to lift the performance of the region and help to minimise socio-economic imbalances across territories. Even where these factors show only weak significance in our findings today, for the future of Georgia's development these factors are only likely to become more necessary as the country transitions to more advanced activities, higher in global production chains. For now, however, interventions need to be mindful of the potential downsides to greater integration. If firms that currently thrive in relatively sheltered regions are unable to compete once barriers to trade – poor levels of infrastructure, for example – are removed, the effect may be to further widen disparities and become a pervasive source of socio-economic and political instability. Complementary capacities need to

be developed in tandem with, or prior to, greater integration, with investments in education and training, raising levels of human capital, likely to prove important areas to focus on.

References

- Altomonte, C. and Colantone, I. (2008). Firm heterogeneity and endogenous regional disparities, *Journal of Economic Geography*, 8(6): 779-810.
- Anderson, K., and Pomfret, R. (2004). Spatial inequality and development in Central Asia, *UNU-WIDER Research Paper No. 2004/36*, United Nations University (UNU).
- Backman, M. (2013). Human capital in firms and regions: Impact on firm productivity, *Papers in Regional Science*.
- Banerjee, B., & Jarmuzek, M. (2009). Anatomy of regional disparities in the Slovak Republic. *IMF Working Paper No. 09/145*.
- Beeson, PE., DeJong, DN. and Troesken, W. (2001). Population Growth in US Counties, 1840-1990. *Regional Science and Urban Economics*, 31: 669–699.
- Bernard, AB. and Jensen, JB. (2004). Why some firms export, *Review of Economics and Statistics*, 86(2): 561-569.
- Boermans, M.A. and Roelfsema, H. (2015). The Effects of Internationalization on Innovation: Firm-Level Evidence for Transition Economies. *Open Economies Review*, 26(2), 333-350.
- Branstetter, LG. (2001). Are Knowledge Spillovers International or Intranational in Scope?, *Journal of International Economics*, 53(1): 53-79.
- Bristow, G. (2010). Resilient regions: re-‘place’ing regional competitiveness, *Cambridge Journal of Regions, Economy and Society*, 3: 153–167.
- Brühlhart, M. (2011). The spatial effects of trade openness: A survey, *Review of World Economics*, 147: 59-83.
- Buck, N., Gordon, I., Harding, A., and Turok, I. (2005). Changing Cities: Rethinking Urban Competitiveness, Cohesion and Governance, *Palgrave MacMillan: Basingstoke*.

Campos, NF. and Coricelli, F. (2002). Growth in transition: what we know, what we don't, and what we should,

Chankseliani, M. (2013). Rural disadvantage in Georgian higher education admissions: A mixed-methods study, *Comparative Education Review*, 57 (3): 424-456.

Chinitz, B. (1961). Contrasts in agglomeration: New York and Pittsburgh, *The American Economic Review*, 51(2): 279–289.

Christie, E. (2008). The Non-Observed Economy in Georgia: Economic Analysis and Policy Recommendations, *United Nations Development Programme, New York*.

Ciccone, A. (2002) Agglomeration effects in Europe, *European Economic Review* 46: 213–227.

Duranton, G. and Puga, D. (2001). Nursery cities: Urban diversity, process innovation, and the life cycle of products, *American Economic Review*, 91(5): 1454-1477.

Duranton, G. and Puga, D. (2004). Micro-foundations of urban agglomeration economies, In Henderson, V. and Thisse, JF. (Eds.), *Handbook of Regional and Urban Economics*, 4: 2063-2117.

Ellison, G. and Glaeser, EL. (1999). The Geographic Concentration of Industry: Does Natural Advantage Explain Agglomeration?, *American Economic Review*, 89(2): 311-316.

Farole, T., Rodríguez-Pose, A. and Storper, M. (2011). Cohesion Policy in the European Union: Growth, Geography, Institutions, *Journal of Common Market Studies*, 45(5): 1089-1111.

Feldman, MP. (1994). *The Geography of Innovation*, Kluwer Academic Publishers: Boston.

Fujita, M., Krugman, P. and Venables, A. (1999). *The Spatial Economy: Cities, Regions, and International Trade*, MIT Press: Cambridge.

Fujita M. and Thisse JF. (2002). *Economics of Agglomeration*, Cambridge University Press: Cambridge

Geroski, PA. (1995). What Do We Know about Entry?, *International Journal of Industrial Organization*, 13: 421-440.

Ghemawat, P. (2007). *Redefining global strategy: Crossing borders in a world where differences still matter*, Harvard Business Press.

Giannias, D., Liargovas, P., and Chepurko, Y. (2005). Regional disparities as barriers to transition to a market economy: The Russian experience, *The Journal of Developing Areas*: 55-70.

Glaeser, E. and Kerr, W. (2009). Local Industrial Conditions and Entrepreneurship: How Much of the Spatial Distribution Can We Explain?, *Journal of Economics and Management Strategy* 18(3): 623-663.

Glaeser and Mare (2001). Cities and Skills, *Journal of Labor Economics*, 19(2): 316-342.

Glaeser, E., Kallal, H., Scheinkman, J. and Shleifer, A. (1992). Growth in cities, *Journal of Political Economy*, 100: 1126-1152.

Henderson, JV. (1988). *Urban Development: Theory, Fact, and Illusion*, Oxford University Press: New York.

Huber, P. (2007). Regional labour market developments in transition: A survey of the empirical literature, *European Journal of Comparative Economics*, 4(2): 263-298.

Jacobs, J. (1969). *The Economy of Cities*, Vintage: New York.

Kanbur, R. and Zhang, X. (2005). Fifty Years of Regional Inequality in China: a Journey Through Central Planning, Reform, and Openness, *Review of Development Economics*, 9(1): 87-106.

Krugman, P. (1991). Increasing returns and economic geography, *Journal of Political Economy*, 99: 483-499.

- Krugman, P. (1997). *Pop internationalism*, MIT Press: Cambridge.
- Kuriakose, S. (2013). Fostering Entrepreneurship in Georgia, *World Bank: Washington, DC*.
- Lessmann, C. (2009). Fiscal Decentralization and Regional Disparity: Evidence from Cross-section and Panel Data, *Environment and Planning A*, 41(10): 2455–2473.
- Levinsohn, J. and Petrin, A. (2003). Estimating production functions using inputs to control for unobservables, *Review of Economic Studies*, 70: 317–341.
- Malmberg, A., Malmberg, B. and Lundeqvist, B. (2000). Agglomeration and firm performance: economies of scale, localisation, and urbanisation among Swedish export firms, *Environment and Planning A*, 32: 305-321.
- Marshall, A. (1890). *Principles of economics: An Introductory Volume*, MacMillan: London.
- Murrell, P. (2005). Institutions and firms in transition economies, In *Handbook of new institutional economics*, Springer US: 667-699.
- Ottaviano, GIP. and Thisse, JF. (2004). Agglomeration and economic geography, In Henderson, JV. and Thisse, JF. (Eds.), *Handbook of Regional and Urban Economics*, 4, North-Holland: Amsterdam, 2563-2608.
- Ottaviano, GIP. and Thisse, JF. (2005). New Economic Geography: what about the N?, *Environment and Planning A*, 37(10): 1707-1725.
- Özsoy, I. and Kubetova, M. (2006). The Development of Business Sector in Georgia, *IBSU Scientific Journal*, 1 (1): 1-14.
- Prud'homme, R. (1995). The dangers of decentralisation, *World Bank Research Observer*, 10: 201-220.
- Qian, Y. (2002). How Reform Worked in China, William Davidson Institute Working Paper Number 473a, June 2002.

Rappaport, J. and Sachs, JD. (2003). The United States as a Coastal Nation, *Journal of Economic Growth* 8(1): 5-46.

Roberts, MJ. and Tybout, JR. (1997). The decision to export in Colombia: an empirical model of entry with sunk costs, *The American Economic Review*, 87 (4): 545-564.

Rodríguez-Pose, A. (2012). Trade and regional inequality, *Economic Geography*, 88(2): 109-136.

Rodríguez-Pose, A., and Ezcurra, R. (2010). Does decentralization matter for regional disparities? A cross-country analysis, *Journal of Economic Geography*, 10: 619-644.

Rodríguez-Pose, A. and Gill, N. (2005). On the 'economic dividend' of devolution, *Regional Studies*, 39(4): 405-420.

Scott, J. (1988). Social Network Analysis, *Sociology*, 22(1): 109-127.

Tatar, M. (2010). Estonian local government absorption capacity of European Union structural funds, *Administrative Culture*, 11(2): 202-226.

Timm, C. (2013). Economic regulation and state interventions: Georgia's move from neoliberalism to state managed capitalism, *PFH Forschungspapiere/Research Paper No. 2013/03: Göttingen*.

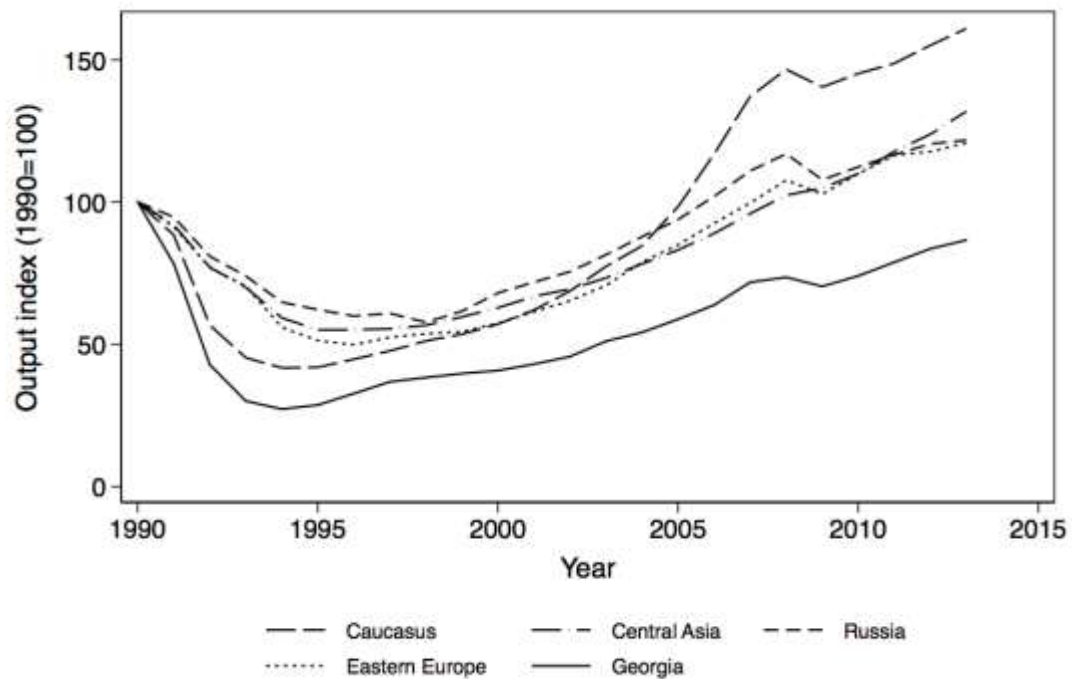
Tondl, G. and Vuksic, G. (2003). What makes regions in Eastern Europe catching up? The role of foreign investment, human resources and geography, *ZEI working paper No. B 12-2003*.

He, C., Wei, YD., and Xie, X. (2008). Globalization, institutional change, and industrial location: Economic transition and industrial concentration in China, *Regional Studies*, 42(7): 923-945.

Williamson, JG. (2005). Winners and losers over two centuries of globalization. Wider perspectives on global development, *UNU-WIDER, Palgrave Macmillan: New York*, 136-174.

World Bank. (2010). Doing business 2011: Georgia - making a difference for entrepreneurs: comparing business regulation in 183 economies, *World Bank: Washington, DC*.

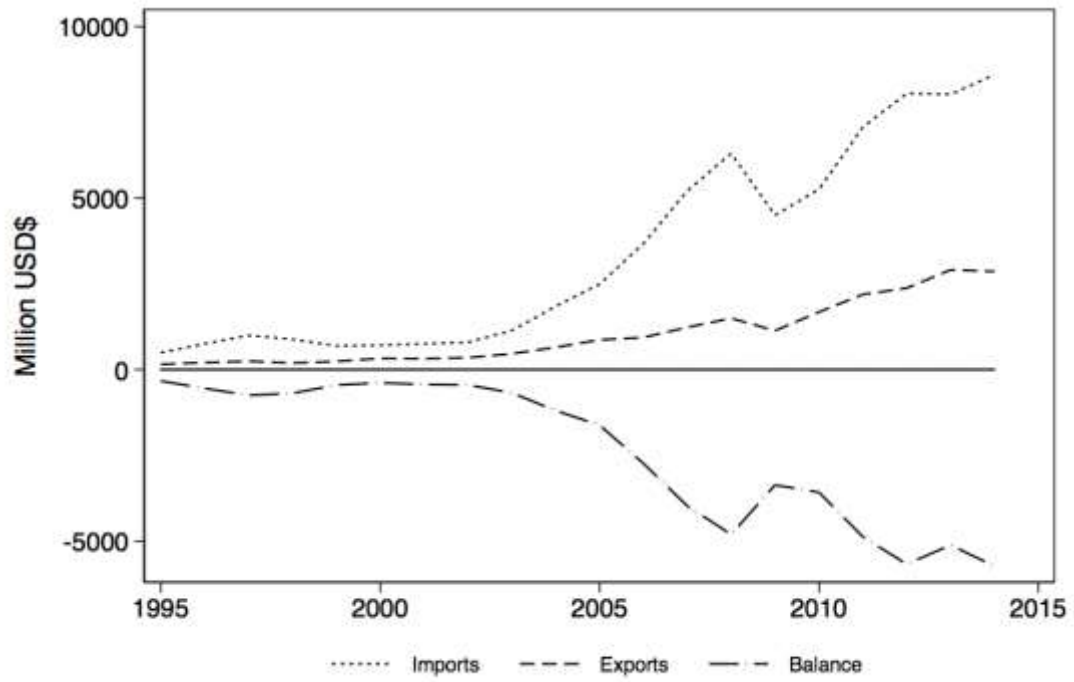
Figure 1: Evolution of national output across selected transition states



Source: World development indicators; Authors' calculations

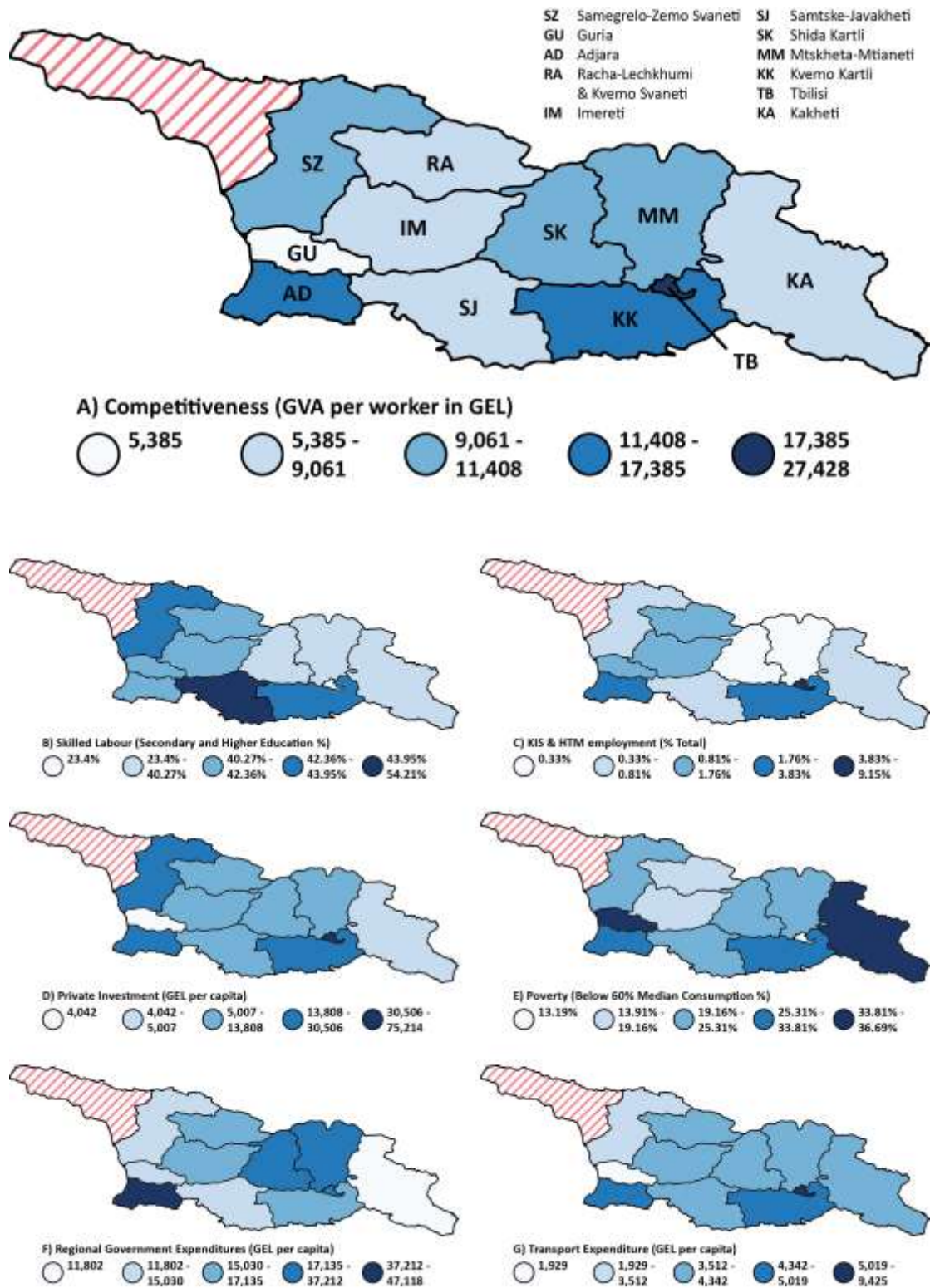
Note: Regional averages include the following states: Caucasus (Georgia, Armenia, Azerbaijan); Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan); Eastern Europe (Estonia, Ukraine, Belarus, Moldova).

Figure 2: Annual imports, exports, and trade deficit (million USD)



Source: Geostat; Authors' calculations

Figure 3: Regional disparities in Georgia



Tables

Table 1: Dispersion in regional output (national average = 100)

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| TB | 187.14 | 191.39 | 184.59 | 180.46 | 181.04 | 181.73 | 190.77 |
| SJ | 71.53 | 76.74 | 85.37 | 87.40 | 87.77 | 88.47 | 85.05 |
| GU | 88.38 | 82.84 | 73.38 | 76.45 | 75.75 | 75.44 | 74.95 |
| IM_RK | 62.81 | 67.32 | 72.66 | 76.79 | 73.26 | 72.32 | 70.47 |
| KK | 64.43 | 62.99 | 62.24 | 61.14 | 66.05 | 67.34 | 62.98 |
| SZ | 81.77 | 76.59 | 62.29 | 62.69 | 67.01 | 66.46 | 61.88 |
| AD | 71.19 | 67.05 | 67.22 | 73.28 | 70.59 | 67.42 | 61.63 |
| KA | 74.47 | 65.64 | 67.23 | 64.69 | 65.57 | 66.58 | 60.29 |
| SK_MM | 63.89 | 58.82 | 64.76 | 58.57 | 59.26 | 60.31 | 57.01 |
| σ convergence | 0.339 | 0.355 | 0.342 | 0.344 | 0.334 | 0.335 | 0.374 |

Note: Ranked by 2012 GDP index values

Table 2: Correlation matrix (regional variables)

| | Localisation | Urbanisation | Topography | Rainfull (July) | Density | Human capital | Unemployment | Income | Minority pop. | Poverty | Pension recipients | SME employment | KIS & HTM empl. | Private investment |
|--------------------|--------------|--------------|--------------|-----------------|--------------|---------------|--------------|--------------|---------------|--------------|--------------------|----------------|-----------------|--------------------|
| Localisation | 1.00 | | | | | | | | | | | | | |
| Urbanisation | 0.00 | 1.00 | | | | | | | | | | | | |
| Topography | -0.73 | 0.14 | 1.00 | | | | | | | | | | | |
| Rainfull (July) | -0.55 | 0.06 | 0.71 | 1.00 | | | | | | | | | | |
| Density | 0.92 | -0.17 | -0.79 | -0.60 | 1.00 | | | | | | | | | |
| Human capital | 0.35 | -0.06 | -0.30 | -0.22 | 0.39 | 1.00 | | | | | | | | |
| Unemployment | 0.86 | -0.19 | -0.78 | -0.43 | 0.93 | 0.41 | 1.00 | | | | | | | |
| Income | 0.82 | -0.17 | -0.70 | -0.54 | 0.88 | 0.29 | 0.78 | 1.00 | | | | | | |
| Minority pop. | 0.14 | 0.04 | -0.48 | -0.31 | 0.16 | 0.04 | 0.07 | 0.15 | 1.00 | | | | | |
| Poverty | -0.71 | 0.14 | 0.59 | 0.49 | -0.76 | -0.36 | -0.65 | -0.87 | -0.11 | 1.00 | | | | |
| Pension recipients | 0.81 | -0.18 | -0.80 | -0.50 | 0.86 | 0.19 | 0.85 | 0.86 | 0.20 | -0.71 | 1.00 | | | |
| SME employment | -0.77 | 0.20 | 0.65 | 0.27 | -0.82 | -0.34 | -0.89 | -0.75 | 0.17 | 0.64 | -0.79 | 1.00 | | |
| KIS & HTM empl. | 0.87 | -0.16 | -0.75 | -0.49 | 0.95 | 0.51 | 0.96 | 0.74 | 0.13 | -0.62 | 0.77 | -0.81 | 1.00 | |
| Private investment | 0.88 | -0.16 | -0.75 | -0.57 | 0.95 | 0.20 | 0.87 | 0.91 | 0.16 | -0.75 | 0.86 | -0.79 | 0.85 | 1.00 |
| Public expenditure | 0.75 | -0.18 | -0.67 | -0.24 | 0.81 | 0.13 | 0.86 | 0.70 | 0.10 | -0.44 | 0.73 | -0.81 | 0.85 | 0.74 |
| Subsidies | -0.14 | -0.07 | 0.25 | 0.65 | -0.15 | 0.00 | -0.02 | -0.12 | -0.27 | 0.20 | -0.20 | -0.14 | -0.11 | -0.11 |
| Social benefits | 0.87 | -0.17 | -0.75 | -0.54 | 0.94 | -0.03 | 0.91 | 0.91 | 0.19 | -0.68 | 0.85 | -0.81 | 0.91 | 0.95 |
| Education | 0.46 | -0.14 | -0.37 | 0.04 | 0.49 | 0.33 | 0.63 | 0.42 | -0.02 | -0.24 | 0.53 | -0.58 | 0.59 | 0.44 |
| Transport | 0.55 | -0.12 | -0.47 | -0.31 | 0.59 | 0.35 | 0.55 | 0.70 | 0.13 | -0.47 | 0.65 | -0.52 | 0.54 | 0.55 |

Table 3: Labour productivity in 2012 (GVA per worker in GEL)

| | All Sizes | Micro | Small | Medium | Large |
|------------------|---------------|---------------|---------------|---------------|---------------|
| TB | 20,291 | 20,100 | 22,257 | 16,505 | 19,205 |
| | <i>21,507</i> | <i>12,591</i> | <i>6,051</i> | <i>2,372</i> | <i>493</i> |
| AD | 10,058 | 9,659 | 11,209 | 10,374 | 12,097 |
| | <i>4,796</i> | <i>3,431</i> | <i>967</i> | <i>329</i> | <i>69</i> |
| SZ | 8,175 | 6,588 | 11,693 | 12,801 | 15,512 |
| | <i>3,106</i> | <i>2,220</i> | <i>636</i> | <i>219</i> | <i>31</i> |
| KK | 7,618 | 5,908 | 11,246 | 18,391 | 23,228 |
| | <i>3,418</i> | <i>2,621</i> | <i>580</i> | <i>204</i> | <i>13</i> |
| SK_MM | 6,745 | 5,616 | 8,153 | 12,834 | 16,117 |
| | <i>2,879</i> | <i>2,108</i> | <i>519</i> | <i>227</i> | <i>25</i> |
| KA | 6,114 | 5,190 | 8,318 | 13,358 | 10,076 |
| | <i>2,198</i> | <i>1,749</i> | <i>319</i> | <i>118</i> | <i>12</i> |
| SJ | 5,958 | 5,017 | 8,121 | 11,782 | - |
| | <i>1,402</i> | <i>1,070</i> | <i>254</i> | <i>78</i> | - |
| IM_RK | 5,177 | 4,404 | 7,269 | 10,823 | 4,759 |
| | <i>5,335</i> | <i>4,176</i> | <i>886</i> | <i>245</i> | <i>28</i> |
| GU | 3,305 | 3,000 | 4,163 | 5,977 | - |
| | <i>1,169</i> | <i>939</i> | <i>180</i> | <i>50</i> | - |
| ALL FIRMS | 13,268 | 11,721 | 16,917 | 14,961 | 17,500 |
| | <i>45,810</i> | <i>30,905</i> | <i>10,392</i> | <i>3,842</i> | <i>671</i> |

Note: Number of firms observed in italics. Firm sizes bands defined as follows: Micro (<10 employees), Small (10–49 employees), Medium (51-250) and Large (>250); - signifies insufficient data

Table 4: Multi level analysis of labour productivity heterogeneity

| | (1) | (2) | (3) |
|--------------------------------|-----------|-----------|-----------|
| Constant | 7.943*** | 8.379*** | 7.977*** |
| | (0.13) | (0.08) | (0.11) |
| Variance | | | |
| Firm | 1.862 | 1.859 | 1.638 |
| | (0.02) | (0.02) | (0.02) |
| Region | 0.157 | | 0.093 |
| | (0.07) | | (0.05) |
| Sector | | 0.232 | 0.259 |
| | | (0.06) | (0.03) |
| Variance partition coefficient | | | |
| Firm | 92.2% | 88.9% | 82.3% |
| Region | 7.8% | | 4.7% |
| Sector | | 11.1% | 13.0% |
| `No. | 13,958 | 13,958 | 13,958 |
| Log likelihood | -24163.9 | -24187.1 | -23449.5 |
| LR Test | 1887.7*** | 1841.2*** | 3316.5*** |
| Groups | 9 | 43 | |
| Min firms | 332 | 2 | |
| Max firms | 6,751 | 2,377 | |
| Average firms | 1,550.9 | 424.6 | |

Table 5: Baseline specification (Labour productivity)

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|-------------------------|--------------------|---------------------|--------------------|---------------------|--------------------|---------------------|---------------------|---------------------|
| Size (turnover) | 0.543*** (0.03) | 0.449*** (0.01) | 0.543*** (0.02) | 0.448*** (0.01) | 0.543*** (0.03) | 0.448*** (0.01) | 0.448*** (0.01) | 0.448*** (0.01) |
| Capital intensity | 0.145*** (0.02) | 0.111*** (0.01) | 0.145*** (0.02) | 0.111*** (0.01) | 0.145*** (0.02) | 0.111*** (0.01) | 0.111*** (0.01) | 0.111*** (0.01) |
| Female workers | -0.058 (0.12) | -0.260*** (0.08) | -0.057 (0.12) | -0.258*** (0.08) | -0.057 (0.12) | -0.258*** (0.08) | -0.258*** (0.08) | -0.258*** (0.08) |
| Ownership | 0.136 (0.09) | 0.511*** (0.07) | 0.134 (0.09) | 0.502*** (0.07) | 0.133 (0.09) | 0.501*** (0.07) | 0.501*** (0.07) | 0.501*** (0.07) |
| Localisation | | | 0.054 (0.06) | 0.106*** (0.03) | 0.053 (0.06) | 0.106*** (0.03) | 0.106*** (0.03) | 0.106*** (0.03) |
| Urbanisation | | | 0.090 (0.52) | 0.041 (0.32) | -0.025 (0.54) | -0.140 (0.34) | -0.140 (0.34) | -0.140 (0.34) |
| Density | | | -1.009 (0.93) | -0.333 (0.54) | -1.007 (0.93) | -0.347 (0.54) | -0.347 (0.54) | -0.347 (0.54) |
| Wx*diversity | | | | | -0.600 (0.87) | -0.947* (0.57) | -0.947* (0.57) | -0.947* (0.57) |
| Wx*denisty | | | | | -0.108 (1.52) | -0.295 (0.98) | -0.295 (0.98) | -0.295 (0.98) |
| Topography | | | | | | | -0.823 (1.24) | |
| Rainfall (July) | | | | | | | | -0.505 (1.99) |
| FE/RE | FE | RE | FE | RE | FE | RE | RE | RE |
| Region dummies | | Y | | Y | | Y | Y | Y |
| Sector dummies | | Y | | Y | | Y | Y | Y |
| Time dummies | Y | Y | Y | Y | Y | Y | Y | Y |
| No. | 28,507 | 28,507 | 28,507 | 28,507 | 28,507 | 28,507 | 28507 | 28507 |
| R ² adjusted | 0.24 | 0.23 | 0.24 | 0.23 | 0.24 | 0.23 | 0.23 | 0.23 |

| | | | |
|--------------------|-----------|-----------|-----------|
| Sargan-Hansen test | 182.48*** | 201.98*** | 202.08*** |
|--------------------|-----------|-----------|-----------|

p<0.1, ** p<0.05, *** p<0.01

Table 6: Cascading regressions (coefficients only)

| | | | | | |
|-----------------------|---------------------|---------------------|-----------------------|-------------------|--------------------|
| Human capital | 0.183*** (0.05) | 0.155*** (0.03) | KIS & HTM share | 0.015 (0.04) | 0.006 (0.02) |
| Wx*human capital | -0.442 (0.46) | -0.323 (0.27) | Wx* KIS & HTM share | 0.005 (0.07) | 0.018 (0.05) |
| Unemployment | -0.065 (0.11) | -0.083 (0.06) | Private investment | 0.001 (0.04) | -0.002 (0.02) |
| Wx*unemployment | -0.426*** (0.14) | -0.394*** (0.09) | Wx*private investment | -0.070 (0.05) | -0.081** (0.04) |
| Income | 0.275 (0.19) | 0.266** (0.13) | Expenditure | 0.238** (0.10) | 0.205*** (0.05) |
| Wx*income | -0.015 (0.32) | -0.157 (0.22) | Wx*expenditure | -0.286 (0.24) | -0.140 (0.14) |
| Minorities | -0.048 (0.04) | -0.053* (0.03) | Subsidies | 0.207 (0.13) | 0.199*** (0.07) |
| Wx* minorities | -0.071 (0.12) | -0.097 (0.08) | Wx*subsidies | -0.039 (0.17) | -0.021 (0.10) |
| Poverty | -0.065 (0.11) | -0.059 (0.07) | Social benefits | 0.099 (0.08) | 0.103** (0.04) |
| Wx*poverty | -0.420* (0.25) | -0.272 (0.18) | Wx*social benefits | -0.007 (0.16) | 0.030 (0.09) |
| Pension recipients | -0.274** (0.14) | -0.285*** (0.08) | Education | -0.026 (0.04) | -0.048* (0.02) |
| Wx*pension recipients | -0.277 (0.23) | -0.348** (0.14) | Wx*education | 0.054 (0.07) | 0.041 (0.04) |
| SME share | -0.079 (0.14) | -0.054 (0.10) | Transport | 0.027 (0.02) | 0.034*** (0.01) |
| Wx*SME share | 0.089 (0.36) | 0.179 (0.25) | Wx*transport | 0.007 (0.04) | 0.012 (0.03) |

| FE/RE | FE | RE | FE/RE | FE | RE |
|----------------|--------|--------|----------------|--------|--------|
| Region dummies | | Y | Region dummies | | Y |
| Sector dummies | | Y | Sector dummies | | Y |
| Time dummies | Y | Y | Time dummies | Y | Y |
| No. | 28,507 | 28,507 | No. | 28,507 | 28,507 |

p<0.1, ** p<0.05, *** p<0.01