

A Retrospective on the Challenges of the East German Economy
Following Reunification

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Abstract

Just over 30 years have passed since the reunification of East and West Germany. While East Germany fell behind under a command economy, it was generally argued that a transition to a market economy would allow it to catch up. Despite the original cause of falling behind being long gone, East Germany has yet to fully recover.

This paper is a literature review which covers the challenges of German reunification. It finds that the initial reunification caused a significant recession in East Germany, largely due to low labour productivity, high wages and outdated production. Later, East Germany recovered from this shock and is now on the road to convergence, with West-to-East migration overtaking the reverse for the first time in 2017, but differences in wages and productivity persist. This paper finds explanations to these differences but finds that it is unclear to what extent some of the differences between East and West are the result of GDR policy and to what extent they are pre-existing regional differences. Ultimately no clear policy recommendations or alternatives are found, as the problems of East Germany seem to be largely self-correcting over time, and it is unclear whether either government intervention or the lack of it could have done or could now do very much to speed up convergence.

Keywords East Germany, German reunification, convergence, transition economics, labour market, collective bargaining, human capital, migration, entrepreneurship, economic history

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1. Introduction

On the 3rd of October, 1990 the German Democratic Republic, colloquially known as East Germany, ceased to exist. The GDR was annexed as a whole into the Federal Republic of Germany, or West Germany, reunifying the two countries after roughly 35 years of separation. It is common knowledge that in this time East Germany fell behind economically relative to West Germany, experiencing lower GDP growth and a lower standard of living. This has been considered a natural experiment for the importance of institutions and in particular in comparing command economies with market economies. As Milton Friedman puts it: “It would be hard to devise a better controlled experiment for comparing different economic systems than the experience provided by East Germany and West Germany.” (Friedman, in Breit and Spencer 2014, p.54) We might also reframe economic systems as institutions. Institutions are the way that a state, society and legal system is organised and are generally considered central to the success of a country. Acemoglu and Johnson (2005) go so far as to call institutions the “primary determinants of economic performance.”

West Germany has been and continues to be one of the most economically successful regions in the world, and it would make sense to say that it owes this success not only to a capitalist market economy in general, but also to its own well-functioning institutions in particular. If this is indeed the case, then we should expect that the extension of successful West German institutions to East Germany ought to result in the East achieving similar outcomes to the West. Certainly a tendency to converge towards similar income levels was also found experimentally in US states and Western European regions by Barro et al. (1991).

While, East Germany has indeed experienced economic growth since, but it has not caught up to West Germany, and differences do persist to this day. This raises the question: if East and West Germany are so naturally comparable, and East Germany was indeed as Uhlig (2008) put it “artificially held back”, then just why has it been so slow to catch up with the West?

This paper will go through this literature and summarise the development of East Germany since unification and the challenges it has faced and continues to face. To set the scene, I will begin with some initial challenges and policies around the time of unification and their effects. Perhaps the seminal article on the case of East Germany post-reunification is Akerlof et al.’s 1991 article *East German in from the Cold: The Economic Aftermath of Currency Union*, which examines the

more or less immediate aftermath of the German economic, monetary and social union and subsequent German reunification. Section 2 leans heavily on Akerlof et al. (1991) to describe the initial recession, but supplements it with other sources as well.

Following this, I will transition to more persistent problems, which are the more interesting part of this paper. Some of these issues trace their roots to or before reunification, but they have been categorised separately for their greater ongoing relevance. I place particular emphasis on the East German labour market, considering wages, employment and migration, which is also focused on in much of the relevant literature, but also the relevance of social policies and entrepreneurship on these.

Much of the literature may create the impression that the policies of the German Democratic Republic or unified Germany are the root cause of differences between East and West, and that addressing these problems might even bring East Germany fully in line with the West. Section 4 and perhaps in particular Becker et al. (2020) shows that East and West Germany are not entirely comparable prior to their division either. There were in fact some pre-existing differences between German regions, and there was also a time between the end of the Second World War and the erection of the Berlin Wall where migration between the two Germanies was possible, which in turn resulted in some self-selection.

The focus on problems may give the impression that East Germany is doing poorly, but this is only true in that it is not doing as well as West Germany, which it is catching up to. Section 5 provides a little bit of additional context before the conclusion.

2. Initial Effects of Reunification

The German economic, monetary and social union economically united the two Germanies in June, and had dire consequences for East Germany, as noted by Akerlof et al. (1991). This paper is an in-depth overview of the situation of East Germany right after unification and perhaps the seminal article on the case.

As Akerlof notes, by the end of 1990, industrial employment had declined by a quarter. Some 20% of those still employed in East Germany worked “short time” (*Kurzarbeit*), an arrangement by which firms may temporarily reduce working hours of employees, as opposed to firing them, paying employees a fraction of their normal wages for the hours not worked. A combination of unemployment and low productivity reduced industrial output alone by 35%. East

Germany reached nearly 9% unemployment within months. To make matters worse, old jobs were not replaced by new ones, rather job openings simply dried up.

2.1 Consumer Demand

From the perspective of East German firms, unification caused a colossal demand shock. Akerlof et al. note that East Germans were no longer buying their goods, practically at all, even though prices decreased as much as 50%. Without being able to sell their products, firms soon faced themselves unable to pay their employees either, leading to the increased unemployment in East Germany.

Of course, in practice it was not that East Germans stopped consuming, but rather that West German products became available to them. There had previously been no competition for Eastern products, and consumers simply had no choice but to buy what was available. Following the German union, Eastern products were completely outcompeted. Unfortunately for Eastern firms, they were outcompeted both in the East and West, unable either to keep their existing consumers or to gain new ones in the West.

Furthermore Akerlof et al. also highlight that the export demand was also bound to drop. Previously East Germany had been a part of The Council for Mutual Economic Assistance (COMECON), which facilitated trade between countries of the Soviet bloc, but with the end of the members of the organisation agreed to dissolve it on the 29th of June, 1991 in Budapest. Exports to other former COMECON states declined by 62% in 1991 alone. (Brunner 2001)

2.2 East German Wages

The plummeting demand for East German goods and consequent decline in demand for Eastern labour is but one part of the equation, and Akerlof et al. focus much more on labour supply. While ordinarily high unemployment would mean that there should not be a shortage of labour supply, the paper points out that in practice the cost of labour in East Germany was too high when considering the lower labour productivity of East German workers. Their high wages can be attributed to two factors.

The first of these is the German currency union, which replaced the East German Mark with the West German Deutsche Mark. The exchange rate ultimately chosen was 2:1, despite

public pressure to set it at 1:1. Wages were nevertheless converted 1:1, which Akerlof et al. argued was far too high.

A counterargument they raise is that one might argue that the exchange rate does not matter, because new minimum wages would be bargained regardless, and a suitable equilibrium would be found. The paper argues that this would only be the case if unions negotiated about the level of wages, with no regard to current wages, which it says is not the case. Rather, unions in practice bargain as though about increases or decreases to the current wages, and employees are resistant to any decreases in nominal wages.

The second major factor Akerlof et al. claim leading to high wages was that the bargaining of wages was also conducted by West German trade unions, which is relevant because it is not at all obvious that the interests of West German trade unions align with East German workers. Consensus among economists seems to be that unions kept primarily West German employees' interests at heart, and were primarily concerned with preventing competition from East Germany in the form of cheaper labour or mass migration.

This theory is expanded upon by Merkl and Snower (2006) who model two types of wage negotiations. One they call "self-sufficient bargaining" and another they call "bargaining by proxy". By their definitions, West German wage bargaining was self-sufficient, meaning the West German workers bargained for themselves, but East German bargaining occurred by proxy through the same West German unions. As a result, these unions cared about Eastern wages because they determined the employment levels of their (Western) members, and thus could be used to maximise the payoffs of Western workers, not because they cared about Eastern workers.

Qualitatively what their model shows is that bargaining by proxy results in higher wages for Eastern workers than self-sufficient bargaining, which results in higher Western employment, but lower Eastern employment. The difference is determined by the cost of migration, so Western unions would negotiate Eastern wages such that Eastern workers would not benefit from migration Westward. By contrast self-sufficient bargaining in the East would not take the cost of migration into account, resulting in a lower wage, higher emigration, and higher employment.

2.3 Privatization

One of the first challenges Akerlof et al. describe facing Germany in changing economic systems was the privatization of state-owned companies. For the purpose of privatization, the East German

government created the Treuhandanstalt on the 17th of June, 1990. The Treuhand was a trust which was given ownership of the companies in question with the express purpose of privatizing them. This privatization was nevertheless slow to take off. The nationally owned companies of East Germany were in need of reorganization, in particular breaking up into smaller units, which further increased the number of firms to be privatized. The some 8000 East German companies to be privatized were considered in scope equivalent to roughly 40000 West German ones. (Collier 1991)

In addition to the size of companies and the problems of reorganization, Akerlof et al. note several reasons why the Treuhand's companies were difficult to sell, ranging from not meeting Western safety and environmental standards to simply not making a profit.

Even so, they might have sold at least for scrap value, but the Treuhand did not sell properties to the highest bidder, but rather prioritized the number of jobs and the volume of investment (Collier 1991). Given that only a few firms employing a mere 8% of the labour force were competitive enough to cover their short-run costs, (Akerlof et al. 1991) with such strings attached the value of companies could even be negative and many were sold even for just a single mark. (Collier 1991)

Like other former command economies in Central and Eastern Europe, Germany chose to recognize old property claims from before the GDR's nationalization policies. This meant that for many properties to be privatized there were also property claims to be processed. In just the first year over a million such property claims were filed on property of the East German state. Akerlof et al. claim this lack of clarity over who the legitimate owner of state property really was slowed down the privatization process considerably. However, by March of 1991 the process would however be expedited by new legislation allowing the Treuhand to sell properties despite property claims, making it acceptable to compensate rather than retribute lost property (Collier 1991).

3. Persistent Challenges

East Germany's initial transition to a market economy was painful, but decades have passed since that time and convergence has still remained slow. In some respects, things got worse over time, at least initially, for instance unemployment doubled between 1991 and 2004 to 20% (Merkl and Snower 2006). Part of this is the result of a persistent productivity gap between Eastern and

Western workers, which this paper previously touched upon without further explanation of its causes.

3.1 Productivity Gap

Labour productivity declined substantially in East Germany in 1990, nearly halving by August. (Akerlof et al. 1991) The question then remains, why did labour productivity decline and why is it lower than in West Germany to this day? This section will focus primarily on two papers tackling this issue: Dicky and Widmaier (2021) and Fuchs-Schündeln and Izem (2012).

Dickey and Widmaier (2021) is an empirical paper which explores three potential explanations for a difference in wages: the endowment effect, location effect, and human capital depreciation, using data from the German Socio-Economic Panel for the years 2002-2016. The paper separates Germans by origin as well as current region into Easterners and Westerners living in the East and West respectively, and further decomposes the sample into quantiles, thereby separating the location effect from the endowments of Easterners/Westerners as well as separating the effects on different quantiles.

The paper measures human capital quantitatively, considering years of education and work experience. In this regard, East Germans largely have just as good endowments and West Germans, and the majority differences in wages cannot be explained by differences in endowments. However, Dickey and Widmaier found differences in returns to endowments between Easterners and Westerners. For example at the median income level if Easterners had human capital of equivalent value to Westerners, their wages would be 25% higher, suggesting the existence of a qualitative difference in their human capital.

Like others (e.g. Canova 2000), Dickey and Widmaier argue that the unification of Germany can be compared to a mass migration of East Germans to West Germany, and **migration literature [source]** shows that previously accumulated human capital (such as education and work experience) may not have the same value in a new environment. This depreciation reduces the wages of immigrants relative to natives in the general case, or East Germans relative to West Germans in this case. Over time however, assimilation into the new environment would eliminate such disadvantages. Their results show that the difference in returns to endowments is decreasing over time, which is consistent with this difference being the lingering effect of human capital depreciation at the time of reunification.

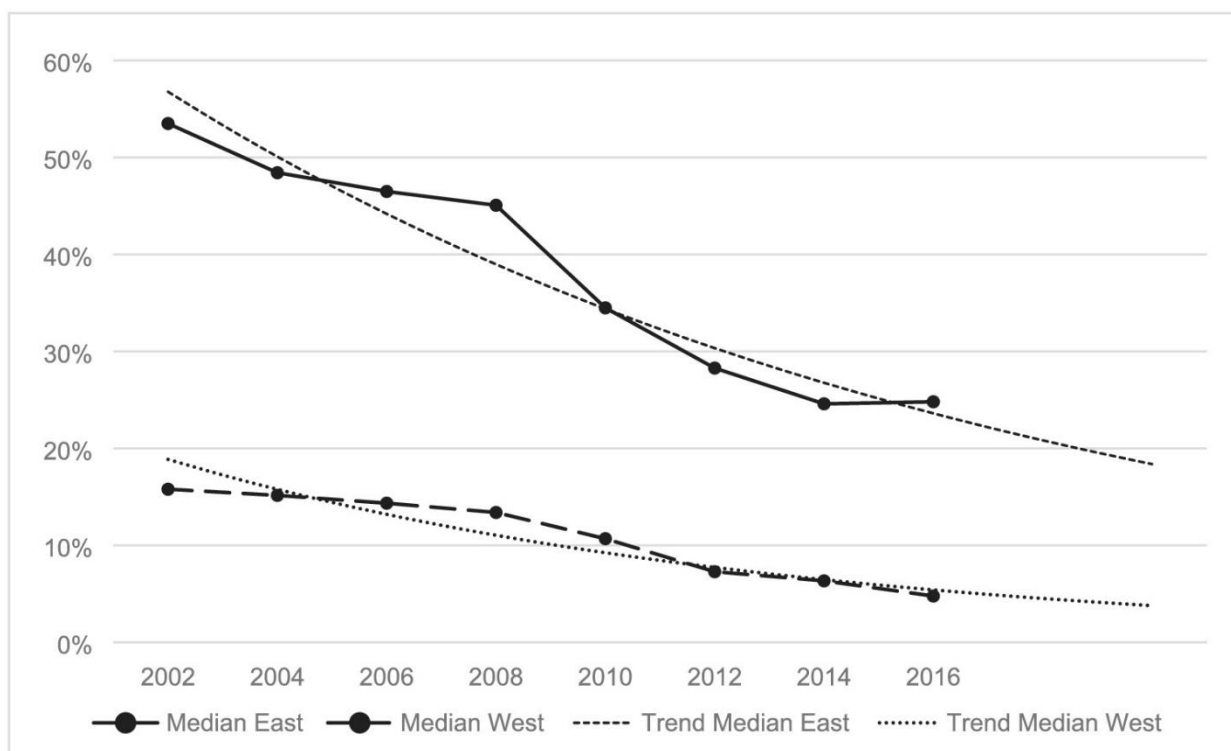


Figure 1. Differences in returns at the median. (Dickey and Widmaier 2021)

Dickey and Widmaier also found that the location effect (i.e. whether someone is currently in East or West Germany) had an impact on wages as well, but only for the lower half of income earners. Furthermore, besides being unable to explain differences for all quantiles, even taken together the location effect, endowment effect and human capital depreciation could not explain all differences, especially in the East, which suggests some unexplained factors accounting for a not insignificant difference.

The depreciation of human capital in particular is supported also by literature not pertaining to East Germany. For example van Leeuwen and Földvári (2007) criticize the use of measures like years of education and conclude that while based on such measures Eastern Europe would have human capital amounting to 70-80% of the United States, in the 1990s the actual value of it was under 20%, and that around that time it temporarily declined. Fuchs-Schündeln and Masella (2016) also point out specific qualitative differences in the GDR's school curriculum compared to West Germany and later reunified Germany, such as more time allocated to natural science, at the expense of the humanities in the East compared to the West, as well as the teaching of Marxist-Leninist social theory and the comparative lack of emphasis on critical thinking. The goal, they

claim, was at least in part indoctrination into the ideology of the state. In line with this one might also assume that the focus on natural science as opposed to humanities was a way to teach useful facts which would be politically uncontroversial.

It is nevertheless one thing that productivity was lower in 1991, and another for there to be a persistent difference. Merkl and Snower (2008) provide a possible explanation for the persistence of lower productivity in East Germany through an “unemployment trap.” The gist of this idea is that unemployment reduces one’s employment opportunities, and so leads to a higher likelihood of unemployment in the future. In other words, unemployment is self-perpetuating.

In their model, they divide the market into high-wage, high-productivity primary jobs, and low-wage, low-productivity secondary or “trapped” jobs. Workers naturally prefer the high-paying primary jobs, but these also require high productivity. If a worker loses a primary job and remains unemployed for some time, their skills will over time atrophy or become less relevant, and they lose access to on-the-job training. Because of this, their productivity does not remain competitive, and they become trapped, no longer capable of obtaining a primary job.

There are a variety of traps that Merkl and Snower describe in their earlier 2006 paper, without modelling them. This “low-skill trap” which results from a lack of access to on-the-job training is but one of them. They consider also the possibility that younger workers who might be better adapted to the market and be more productive are also more likely to migrate, which in turn would leave the less productive workers in East Germany.

The low labour productivity in East Germany (relative to West Germany) is also observed by Fuchs-Schündeln and Izem (2012). They note that if anything East Germans had better endowments in terms of amount of education or experience, so if their skills are largely transferable, they should do well in the (West) German labour market. They use data from the German Institute for Employment Research from 1998 to 2004 and use a special analysis which predicts commuting between East and West.

If workers have worse endowments, they argue, they will not find jobs across the border in the West any better than in the East. If however the difference is the result of regional job characteristics, then their model would predict that border districts on the Eastern side would have lower unemployment and higher commuting rates, as ended up being the case. Fuchs-Schündeln and Izem therefore concluded that either there was no human capital depreciation, or more reasonably there probably was human capital depreciation, but roughly a decade was enough for

East German workers to recover from this. Instead, they propose that the difference in productivity is the result of job characteristics in the East and West. Uhlig (2008) introduces a relevant model which is briefly described in Section 3.2.

Even though this result differs from that of Dickey and Widmaier (2021) with respect to human capital, it should be noted that this study also found only a small lingering difference. In the end the most compatible interpretation might be that there was an initial depreciation of human capital, but that through the acquisition of new human capital, including the entrance into the labour market of young workers growing up in the new system to begin with, these differences have either lessened significantly or even completely disappeared. Crucially this also means that at least the majority of productivity differences cannot be explained by human capital differences anymore.

3.2 Migration

The East German population has decreased relative to West Germany, and East Germany has also been aging thanks to its especially decreasing young population, a major part of which has simply been “emigration” to West Germany. In recent years, the migration trend seems to have softly reversed with West to East migration overtaking the reverse. Nevertheless, East to West migration has been the dominant trend for most of reunified Germany’s history, and this section focuses mostly on explaining that.

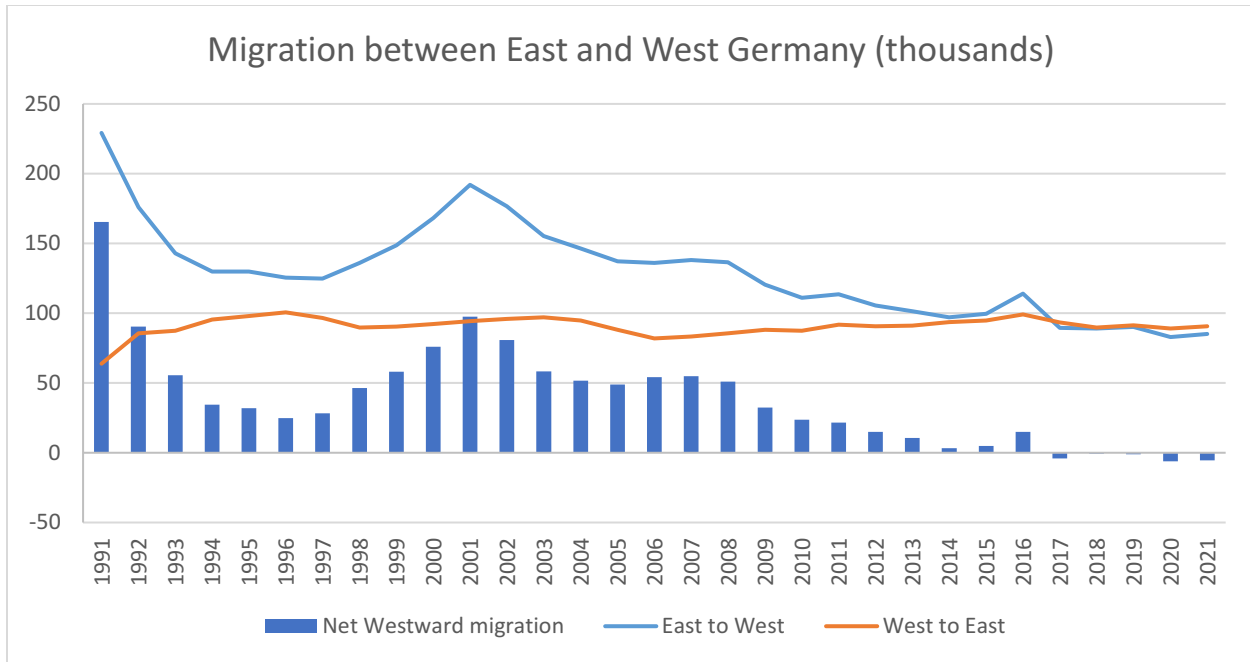


Figure 2. Data from the Federal Statistical Office of Germany

Harald Uhlig (2008) still noted a substantial migration out of East Germany to the West¹ especially of young 18-29 year olds. The only age group not emigrating was those over 50. Merkl and Snower (2006) propose that the longer time horizon ahead of young workers increases the incentive provided by high wages, but conversely aging workers have less to gain.

Hunt (2006) examined more precisely the causes of migration from reunification to the year 2000, using state-level² as well as individual data on wages, unemployment, and migration (alongside related measures).

The paper found that the level of unemployment did not determine emigration, however being laid off could, depending on circumstance. While being unemployed in the long term did not seem to motivate people to move in search of a job, short-term unemployment resulting from being laid off did result in an increased likelihood of older Germans migrating West.

Younger Germans by contrast were not particularly motivated to move based on unemployment, but instead were much more motivated by income. They were more willing to

¹ The data used only extends to 2003

² Excluding Berlin, due to a lack of separation between data from East and West Berlin

change to a higher paying job regardless of current employment, even if it required moving West. Young university graduates were especially likely to migrate.

That wages are especially relevant is also highlighted by the fact that migration slowed as Eastern wages rose, and then as these wages plateaued and Western wages rose migration increased again. The results of the paper also back up the theory that the increased wages in East Germany thanks to West German bargaining succeeded in decreasing westward migration, explaining half the fall in migration (from nearly 400 000 to under 200 000) between 1991 and 1994, and so much as 85% of it for the young.

Hunt also noted that 20% of Easterners who moved West returned to the East later, and that this is probably an underestimate. Such a high percentage may suggest that many people prefer to live in or close to what they consider their home region, even if they are willing to move for opportunity, and it also explains in part the existing West to East migration.

Uhlig (2008) building on his earlier 2006 paper applied a labour search model to East Germany. The model is built on producing “matches” between workers and employers, but its unique feature is that it attempts to explain the differences in employment and migration in East and West Germany through network externalities. In short, firms can become more productive by specializing and connecting to other firms, forming a network of firms where each task can be outsourced to a firm specializing in that particular task.

Relevant for East Germany, a low networking rate would result in less job creation, as for that matter would emigration. East and West Germany could “adopt” opposite equilibria, with West Germany having high networking and high immigration, with low unemployment, while East Germany would remain with low networking and high emigration, with high unemployment.

This model would predict that East Germany might remain perpetually in this state and in the end largely become a desolate wasteland as everyone emigrates. This however seems like quite a radical prediction. Uhlig also expresses some skepticism towards specific results of the model and reminds us of Barro’s influential Wall Street Journal Op-Ed (Barro 1991), which predicts that migration would slow as Eastern wages and Western population density rises, resulting in the East becoming more attractive relative to the West. Time ultimately seems to have ultimately disproven overly pessimistic predictions, as visible in figure 2, in 2017 for the first time West to East migration was higher than East to West, and it has remained that way up to the most recent

available statistics. In fact both Glorius (2010) and figure 2 show that net east-to-west migration decreased more by 2001 than Barro had initially predicted.

The literature on East Germany seems to have no absolute consensus on the ideal level of migration, or whether it should be high or low. Following in the footsteps of Barro, many have written that higher migration would be desirable and that this would lead to convergence, blaming high Eastern wages or fiscal transfers for preventing more rapid convergence. On the other hand, predictions like those of Uhlig's model would show a Germany where individual Germans may benefit from moving West, but where the East might become increasingly destitute. Hunt too raises the concern that while overall German welfare may increase, East Germany may simply have become poorer, and that a loss in population might result in a loss of economies of scale as well as a loss of some of the most educated and productive Easterners to the West. Given, however, that trends have reversed in recent years and now the East receives a moderate net immigration, it would seem that East Germany is as attractive as West Germany, regardless of whether this was reached as fast as possible or in the most ideal way.

3.3 Entrepreneurship

Entrepreneurship is a critical part of any successful market economy, and according to McMillan and Woodruff (2002) also central in the transition from a command economy to a market economy. The large, centralized firms existing in command economies (even privatized) were poorly positioned to take advantage of market reforms, as they had been subject to a number of distortions. For this reason, they generally experienced a fall in output and fired many of their workers, as also happened in Germany.

McMillan and Woodruff go on to write that small and medium-sized businesses are an important part of market economies. New startups were responsible for a significant portion of economic growth as well as job creation in transition economies, such as Poland, Russia and China, which is especially important in replacing the jobs lost due to transition.

Bauernschuster et al. (2012) posit that entrepreneurship depends on individual preference for self-reliance, and that East Germans exhibit less self-reliance and are less prone to entrepreneurship than West Germans. They use data from the German General Social Survey, limiting it only to employees and entrepreneurs, excluding for instance the unemployed.

The survey contained statements such as “The state has to take care of the sick, poor, old and unemployed,” or “Everybody should get the money he needs—regardless of any performance,” which respondents were asked to agree or disagree with. These were used by Bauernschuster et al. to study preference for self-reliance. While these are opinion and ideological questions, entrepreneurs clearly exhibit more individualistic and self-reliant preferences on average. For example, only 76% of entrepreneurs agreed with the first statement, as opposed to 89% of employees. Notably West German attitudes were closer to entrepreneurial ones than East German ones for every question.

Self-reliant preferences of West Germans and early East–West movers.

Do you agree?	(1) Early East–West movers	(2) West–West full sample	(3) West–West matched sample
1) “The state has to care for the sick, poor, old, and unemployed.”	80.28	83.18	84.00
2) “Everybody should get the money he needs—regardless of any performance.”	33.80	37.07	45.21
3) “Income differences give incentives to work hard.”	77.94	60.80	57.75
4) “Rank differences are performance based and therefore acceptable.”	58.57	52.85	45.95
5) “Differences in social status are just—by and large.”	43.66	44.27	54.67
6) “The current welfare system reduces work incentives.”	34.29	48.88	48.65

Notes: The Table shows agreement to survey questions regarding self-reliant preferences for individuals born in East Germany that moved to West Germany before the Berlin Wall was built in 1961 (Early East–west movers) in column (1) and for individuals born in and currently living in West Germany (West–West) in column (2). Column (2) reports results for the whole West–West sample, whereas columns (3) reports results for a nearest neighbor matched sample that ensures that individuals from both groups are equally old. Information on replies to preference statements for these subsamples is available in the ALLBUS survey for the years 1991, 1994, 2000, and 2004.

Figure 3. (Bauernschuster et al. 2012)

Accounting for various factors such as age, gender, education, etc. this difference between East and West Germans remains for five out of six questions. The paper furthermore shows how self-reliant preferences affect entrepreneurship.

One might conclude based on this that the German Democratic Republic and its policies reduced the self-reliance of East Germans, however the authors caution against taking such a conclusion at face value. They propose two alternative explanations for differences: a selective migration between East and West prior to the construction of the Berlin Wall, or pre-existing differences between East and West Germany. These are covered in Section 4.

3.4 Fiscal Transfers

Several papers make note of the relevance of German policy to convergence, in particular as relevant to migration. However, the effects of the German welfare state to convergence outside of

migration don't seem to be studied extensively. There is however one significant paper which is often referenced, that of Canova and Ravn (2000).

Canova and Ravn model the effects of the German welfare state on unification using a stylised model in which the annexation of East Germany is abstracted as a mass migration into West Germany. The East German capital stock is ignored on the grounds that it was largely obsolete and uncompetitive.

Their first model excludes the effects of welfare policies, providing a counterfactual scenario without government intervention. Already this model predicts a long adjustment period, the exact time depending on specific population parameters. Said population is divided into high and low-skilled agents, of which the former are more productive and consequently accumulate capital. Low-skilled agents maximise their welfare from consumption and leisure time, whereas high-skilled agents also have the option of saving for a future return. Naturally, savings double as investments and so increase the size of the economy. East Germans are all modelled as capital-free low-skilled workers, and consequently high-skilled workers are all West Germans.

The addition of the welfare state is modelled as a government redistributing income under a balanced budget. They propose two different models for taxation. Firstly an "egalitarian rule" which equalises average income between the two types of agents using an income tax on high-skilled workers. Secondly, an "insurance rule" where the government protects the consumption of the low-skilled group from fluctuations, this arguably better reflects German policy.

The results obtained using these two models do not differ significantly, and qualitatively both result in the same: low-skilled consumption drops less after reunification, but the taxes required to fund the transfers disincentivise high-skilled workers from working harder and rebuilding capital stock faster. In the egalitarian tax model for instance, after 25 years output is down 2% and capital stock down 4%, with income down 1%, relative to no welfare state.

However, in Canova and Ravn's model without government redistribution it is primarily capital owners who would have benefitted, who in this model are also all West Germans. The market would have essentially redistributed income from the low-skilled Eastern to the high-skilled Western agents. Even if this might have increased overall income more, or increased the rate of convergence, it does not seem to be a politically tenable choice.

The deciding factor in this model is ultimately investment, so if Germans (including low-skilled Germans) for any reason would prioritise the future more, and consequently consume less

and save more, this would improve the East German economy due to the replenishment of capital. East Germans are as a matter of fact more patient, but also invest less, likely due to the fact that investment options such as in the West were not available in the GDR and so East Germans just are not as used to it (Becker 2020).

While East Germany no doubt benefits from investment, it probably does not make sense to still consider this a recovery of capital stock in the 21st century, as East Germany is in fact more capital intensive in its production (Snower and Merkl 2006).

4. Comparability

The expectations for East Germany are greatly impacted by the idea that East and West are comparable, and the East was simply held back by its economic system. It is from this fundamental assumption that it follows that by rectifying the impacts of the policies of the GDR, East Germany ought to catch up to the West. However, it is possible that East and West Germany have fundamental differences which are not easily rectified and might change our expectations.

Becker et al. (2020) focus on the treatment of East Germany as a natural experiment for the effects of a command economy, highlighting that more was at play than an exogenously imposed system on a treatment group of (Eastern) regions identical to a (Western) control group. While perhaps no natural experiment is perfect, any endogenous differences which call into question whether such a comparison is fair might also serve to call into question expectations of eventual convergence.

The authors note that far from being a simple consequence of where the Western and Soviet forces met, the border between Western and Soviet occupation zones was decided prior to the actual occupation, and were drawn along the borders of existing states in the German Empire (as well as internal administrative borders of Prussia). These borders, rather than being accidental, had history (even if so did borders within the two Germanies respectively). At a glance we might consider that culturally East Germany was carved largely out of the state of Prussia, and was largely protestant, as opposed to the much more mixed situation of West Germany. Becker et al. (2020) point out a number of more directly economic differences as well.

Using 1925 census data, Becker et al. show that East Germany was in quite a literal sense a more proletarian region, with the working class accounting for some 47% of the population, as

opposed to 36% in the West. Furthermore, the East German economy was more industrial, whereas West Germany had a greater agricultural sector.

More interestingly Becker et al. note a difference in self-employment of 8.4%, in favour of West Germany. This might imply that entrepreneurship was lower and that East Germans had less self-reliant preferences even prior to the division of Germany. Insofar as we want to assume left-wing political affiliation is also reflective of more egalitarian and less self-reliant preferences, it is also notable that the 1924 vote share of left-wing parties was 15 percentage points higher in the East than the West, including a 5 percentage point difference in the support of the Communist Party. This implies that the findings of Bauernschuster et al. (2012) in Section 3.3 might describe a longstanding difference between East and West Germany, rather than (only) the effects of recent policy. Relevant to the region's more left-wing leanings, Becker et al. (2020) also highlight that the East was also less churchgoing and had a higher female labour force participation. All factors which might hastily be attributed to Communist rule over East Germany, despite at least an inclination in this direction well preceding it.

In addition to pre-existing differences, Becker et al. also stress that the early Allied occupation itself, even before the establishment of the two Germanies, had differing effects in the East and West. In particular, much of East Germany's capital stock was dismantled. Despite similar occupation costs in principle, the form in which East Germany was forced to pay them hurt its productive capacities in ways that the West was not disadvantaged.

Furthermore, the Iron curtain did not properly divide Germany until the construction of the Berlin Wall and so migration between East and West was initially possible. Aggregating statistics, Becker et al. find that between 1945 and 1961 about a fifth of the East German population emigrated. Becker et al. highlight that evidence from previous research shows that these East to West migrants were likelier to be more educated, likelier to be white collar and likelier to be self-employed than those who were from the West to begin with. They were also more likely to see a lesser role for the state in the economy in post-unification surveys, but it is not clear whether this view was only formed as a consequence of the GDR's policies or preceded them.

Becker et al. conclude that entrepreneurship, political preferences, social trust and gender roles were at least in part different prior to the division of Germany, and caution against attributing differences wholly to the imposed political and economic system.

Going back to the state of Germany prior to its division, economic historian Nikolaus Wolf (2009) argues that while by the end of the Weimar Republic Germany was a well-integrated economy, this had not been the case prior to it. Using data from 1885-1933, Wolf applied a gravity model to German administrative divisions and neighbouring regions and found that German unification did not entirely economically unify Germany, but rather under the German Empire trade barriers within the Empire's borders could even be as significant as those over its external borders. More relevantly, Germany was naturally divided into two separate more integrated regions. One in the West, connected by the Rhine River and the rivers connected to it by canals, and one in the East, centred around the Elbe and Oder. The rivers made these regions interconnected and enabled trade within them but did not connect them to each other.

5. Discussion

German reunification and the resultant recession caused a lot of pessimism about the future of East Germany. Perhaps the most pessimistic of these was Barro (1991). In his Wall Street Journal article Barro makes use of Barro et al. (1991), which studied convergence across Western Europe and the United States. History has largely vindicated Barro, at least relative to more optimistic predictions.

However, it is important to contextualise these challenges. Slow as convergence may have been, convergence has happened, and in fact has been faster than Barro's prediction. Migration data shows net East to West migration declined more than Barro expected, while Uhlig (2008) briefly shows how Barro's prediction of a 2% rate of convergence was mostly on the mark, but only after accounting for a much more rapid initial convergence.

Though this paper focuses on the various problems and challenges that have faced East Germany over the years, the story of East Germany would seem to be a hopeful one. Beblo et al. (2012) studied income in East Germany and they found in 1998 81% of East Germans had a higher income than they would have without reunification, although the study did not attempt to separate transition to a market economy from reunification.

Less rigorously, the Financial Times published an article in June (Miller and Chazan 2022) focusing on the growth of the electric car industry and foreign investment in East Germany. The article highlights for example a lithium converter, semiconductor factory and Tesla's "gigafactory", and claims that the wealth of open space in East Germany makes it attractive to investors. Recent foreign investment could be an interesting area for future study.

Figure 4 also shows how East Germany is better off than most other Eastern Bloc countries, at a glance more comparable to Finland or parts of France than to Poland or Hungary. While it may not be one of the wealthiest regions in Europe, it is far from a sorry state.

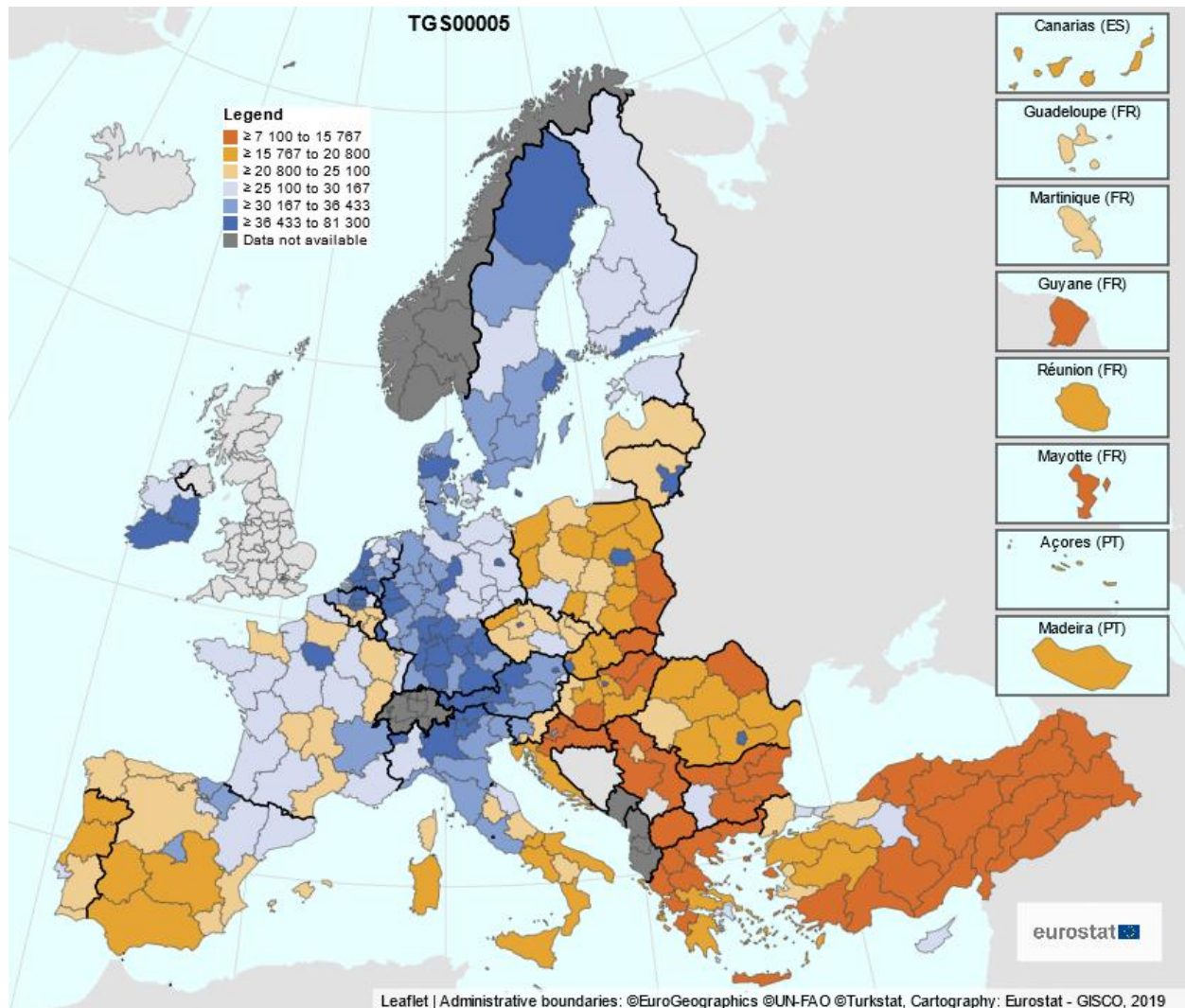


Figure 4. Regional gross domestic product (PPS per inhabitant) by NUTS 2 regions, 2020 (Eurostat)

6. Conclusion

Despite much initial optimism on the prospects of East Germany returning to a market economy, catch-up has ended up taking its time. Especially at the time of unification, output fell considerably, and unemployment rose, as documented by Akerlof et al. It was of course difficult to estimate the GDP of the German Democratic Republic, given it did not use market prices, but it was another

thing to see that East German production methods were often simply so outdated as to be completely nonviable in a market economy. East Germany recovered from this initial shock, but not so much that it would reach Western levels of per capita GDP or income.

The reasons for East Germany's slow catch-up are myriad. Even following recovery and with privatization, the established firms of East Germany were simply poorly equipped to drive significant growth or the transformation towards a vibrant market economy. Entrepreneurship has been shown to be an important driving force of precisely this transformation in transition economies, but it is simply lacking in East Germany relative to the West. How much this is a result of the prior economic system is up in the air, given that there were pre-existing differences in self-employment and entrepreneurship. If the past predicts the future, it is possible that East Germany could be a more productive region even without a significant rise in entrepreneurship. Doubtless more entrepreneurship would nevertheless be helpful.

Firms, East German, West German or foreign have also faced difficulty in East Germany due to high labour costs, which has exasperated unemployment. This creates a difficulty for Germany in that there is a trade-off between wages and employment. East Germany cannot simply catch up in both in the short term. Lower wages also seem to drive emigration, especially of highly educated and productive young people, which in turn can lower average productivity in East Germany.

If Uhlig's model were to be believed, this migration could be perpetual and East Germany could become desolate, however empirical evidence shows that migration out of East Germany did decrease when the wage gap between East and West decreased and vice versa, with Germany seeing net Eastward migration since 2017. Barro's initial prediction, that growing East German wages and increasing population density in the West (and conversely decreasing in the East) would over time equalise the attractiveness of the two regions seems to qualitatively have held true.

Uhlig's rather seems to be useful in providing a plausible explanation for why there might be a productivity gap between East and West, one which relies on firms and yet which firms cannot easily rectify. This is important, because empirical studies show that the productivity gap is at least for the most part not the result of differences in Eastern and Western workers. While there was an initial depreciation of the human capital of Eastern workers, this has either largely or completely recovered by now.

Finally there is the possibility that government policies exasperate the problem of East-West differences, which Canova (2000) as well as Merkl and Snower (2006) lend some credence to. There's also the possibility that more could have been done, for example Akerlof et al. recommended a wage subsidy, but Canova disagreed with this. In the end however it is not clear how much the government could or can do to impact the situation or whether it could meaningfully have done anything differently, especially taking political circumstances into account, which Canova also recognised.

It seems that if there is anywhere there is consensus on policy, then it is on how the initial reunification might have been handled differently. No one seems to consider the German currency union to have been a good idea, at least in the way it was implemented. The West German unions bargaining on behalf of East German workers also seem to universally be considered to have exasperated unemployment in East Germany.

Following recovery from the initial recession however, it would seem that East Germany has stubbornly remained on a slow and steady path of convergence not unlike what was predicted by Barro. It seems somewhat unsatisfying to think of East Germany's convergence as being little more a function of nothing but its initial conditions and time. It is doubly unsatisfying that it takes into account no unique circumstances of East Germany and none of the regions studied in Barro (1991) were transition economies. Even though the results may not be exactly identical to Barro's prediction, it nevertheless would seem to be the most credible prediction, which in turn would imply that there are simply general mechanisms of convergence at play in Germany as they would be anywhere else. Even though the transition to a market economy mattered a great deal, the specific policies of Germany might not have mattered very much.

Optimistically however, given that East Germany has been closing the gap on multiple measures, we may note that East Germany is indeed converging to the West. It may take some time still, but eventually East Germany seems likely to converge if not to, then at least close to the per capita GDP and income of West Germany. East Germany does lend credence to the importance of institutions, but it also serves a cautionary tale to those who would expect rapid results from them.

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