European Studies Program
at the University of the Philippines

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Emmanuel de Dios

From Nation to Region

SIMPLE ANALYTICS OF GERMAN REUNIFICATION

University of the Philippines
Center for Integrative and Development Studies
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SIMPLE ANALYTICS OF GERMAN REUNIFICATION*

Introduction

Five years since the reunification of Germany is a good time to take stock of what, viewed from economic theory, is an almost unparalleled laboratory experiment for international and interregional trade theory. The two elements introduced by German reunification — a common currency and factor mobility — embody the main consequences of turning what was formerly a separate currency area — a nation — into a region.

After drastic negative gross domestic product (GDP) growth rates in 1990 and 1991, East Germany has grown much faster than the West [Figure 1 and Table 1]. As it is, therefore, the presumption appears to be that all that is required for "catching up" is a sufficient amount of time.

Attention has been devoted to the time required until the "catch up." The suggestion in much of politics and the popular press often seems to be that a "catch up" should mean nothing less that a 100 percent equalization between east and west German incomes per capita. Appendix A, by the redoubtable *Spiegel* evaluates the deficiencies of East German economic data based on a comparison with existing Western standards. This implicitly suggests that such deficiencies would not be considered fully addressed short of matching prevailing Western standards.

It is the impatience with this promised "catch-up" that undoubtedly fuels much of the disillusionment, in some cases, even resentment and a corresponding *Ostalgie* that currently dominates the mood among easterners.

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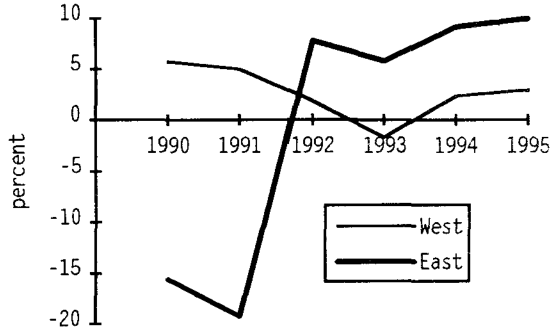
*Paper presented before a roundtable discussion of the European Studies Program at the University of the Philippines on "Germany Five Years After Reunification," 12 December 1995, PCED Hostel, UP Diliman Campus, Quezon City.

Figure 1
Real GDP growth in eastern and western Germany
(1990-1995; percent)



Source: Siebert [1995:12]; 1995 figure is a forecast.

Table 1
GDP growth rates in western and eastern Germany
(percent)

	1990	1991	1992	1993	1994	1995*
West	5.7	5.0	1.8	-1.7	2.3	2.9
East	-15.6	-19.2	7.8	5.8	9.2	10.0
Difference	-21.3	-24.2	6.0	7.5	6.9	7.1

Source: Siebert [1995:12]
*1995 figure is a forecast.

More perceptive writers, however, realize that the idea of a "full" catch up is incorrect. Prof. Dr. H. Siebert [1995:9] of the Kiel Institute for World Economy writes, for example, that "It would not be correct to go for the 100 percent solution because gross domestic product varies considerably from region to region [even] in western Germany. Some *Länder* in west Germany reach only a good 80 percent of the western German average." Having said this, however, the target of an 80-percent catch-up for the east is posited, nonetheless, presumably on the assumption that the downward adjustment is a significant concession. Then, depending on whether the differential in growth between the two regions is five or 10 percent, Siebert calculates the time it would take for an 80 percent catch-up is either 10 years or six years. In recent years, the growth differential has been around seven percent.

This brief note will suggest that further attention needs to be devoted to what a "catch up" exactly means and what a natural "end" of the adjustment process involved in reunification really entails. In the end, the perspective represented here will signify that the process of "catching up" may be both better and worse than has heretofore been expected: better in the sense that the process may take a shorter period to be completed; but worse in that this process of natural adjustment may terminate without accomplishing anything close to the full or even approximate equality in regional incomes that has been promised and expected.

Problematic Aspects of Current Growth in Eastern Germany

Notwithstanding the undoubted improvements in the aggregate growth performance of the new *Länder*, there are some patterns that have caused concern or puzzlement among observers of the process.

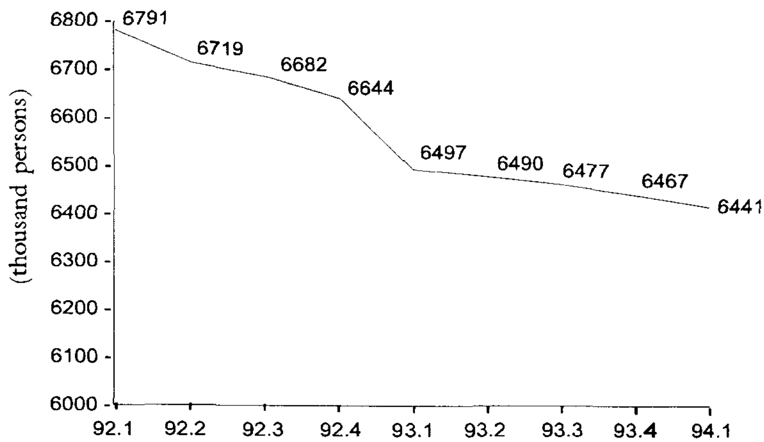
First, the undeniably rapid growth in per capita output has occurred with continuing high unemployment. As may be seen from Table 2 and Figure 2, total employment in Eastern Germany has declined almost consistently, despite the clear upturn in economic growth for the region since 1992. Between the first quarter of 1992 and of 1994, total internal employment fell from 6.43 million to 6.09 million, or by five percent. Most of the lost employment has occurred in industry, and manufacturing in particular, while services have gained by contrast. This changing structure of employment is something we shall return to further below. As might be expected, this is mirrored in the increasing rate of unemployment, which as of the first quarter of 1994 stood at 16.5 percent, or some 1.27 million people [Figure 3]. (The unemployment rate is rendered lower by the fact of emigration, which reduces the labor-force denominator.)

Table 2
Employment by economic sector in eastern Germany
(1992-94; 1000 persons)

	92.1	92.2	92.3	92.4	93.1	93.2	93.3	93.4	94.1
Internal employment	6432	6354	6314	6275	6137	6135	6124	6116	6092
Manufacturing	2368	2322	2308	2288	2152	2141	2143	2101	2046
Agriculture	313	290	272	251	235	229	218	218	209
Trade and transport	1177	1162	1156	1158	1155	1154	1169	1189	1105
Services	978	992	994	996	1009	1036	1046	1065	1088
Government	1596	1588	1584	1583	1585	1575	1548	1543	1544
Commuting workers	359	365	368	368	360	355	353	351	349
Labor force	6791	6719	6682	6644	6497	6490	6477	6467	6441

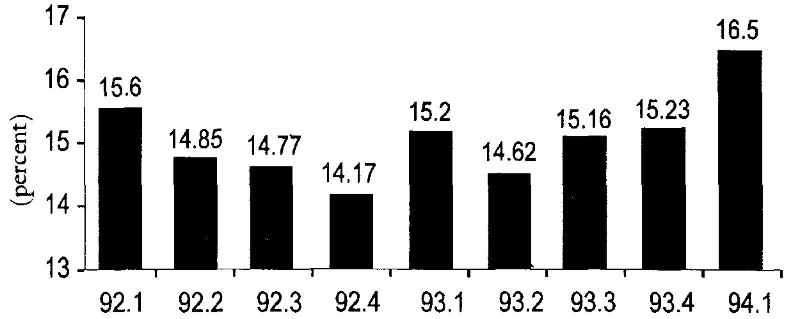
Source: Deutsches Institut für Wirtschaftsforschung (DIfW), Institut für Weltwirschaft (IfW) [1994:4, Table 2].

Figure 2
Employment in eastern Germany



Source: Table 2 above.

Figure 3
Unemployment rates in eastern Germany



Source: Table 2 above, with the unemployed taken as a proportion of the labor force.

Second, manufacturing has continued to stagnate. We have already mentioned the large losses in manufacturing employment. The result has been what may properly be called a "de-industrialization" of eastern Germany. Table 3 below presents a comparison of the presence of manufacturing jobs between eastern and western Germany as of mid-1993. It is notable that the presence of manufacturing activities in formerly highly industrialized eastern *Länder* such as Saxony and Thuringia barely approximates that in relatively agricultural western *Länder* such as Schleswig-Holstein.

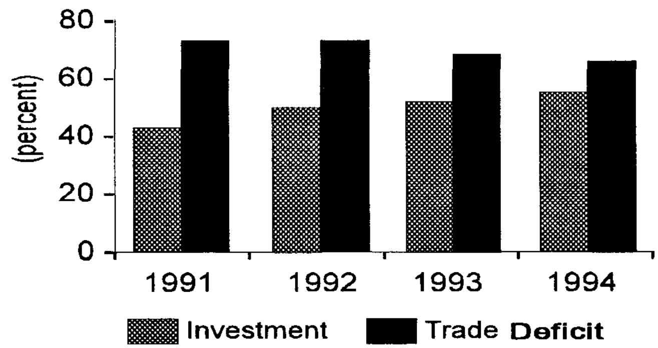
Table 3
Manufacturing jobs per 1000 inhabitants
(as of 30 June 1993)

Old *Länder*	124	New *Länder*	73
Baden-Württemberg	163	Saxony	84
Bavaria	137	Thuringia	82
Bremen	137	Saxony-Anhalt	78
Hesse	120	Brandenburg	61
North Rhine-Westphalia	120	Mecklenburg-West Pomerania	53
The Saar	113	East Berlin	47
Lower Saxony	105		
Hamburg	88		
West Berlin	86		
Schleswig-Holstein	83		
		All Germany	114

Source: Bundesanstalt für Arbeit, as cited in DIfW, IfW [1995:6, Figure 3].

A third aspect causing concern is that growth has been taking place mostly in the nontradeables sector, or among firms serving local (eastern) markets, while few enterprises have arisen which are dedicated to foreign markets.[1] Comparing 1990 with 1994, there have been large or significant losses of importance in hitherto prominent and export-oriented branches such as mechanical engineering, electrical engineering, precision engineering. By contrast, the construction industry has grown tremendously.

Figure 4
Investment and trade deficits in eastern Germany
(in 1991 prices; percent of GDP)



A final question, of course, is whether the current high aggregate growth rates are **sustainable.** From an aggregate viewpoint, it would appear a good sign that total investment in eastern Germany has risen to an astounding figure of more than 50 percent of GDP [Figure 4]. In many respects, the situation is similar to that of a borrowing country. High investment rates are financed not out of domestic eastern saving but by "foreign saving," which includes to a large extent the unilateral transfers from the west. This in turn is partially reflected in a large virtual "trade deficit" for the east, which amounted to more than 60 percent of GDP in 1994.

In the case of a country, the ideal course of development would be to borrow to finance investment whose productivity in the future would directly or indirectly allow the loan to be repaid. This is certainly part of the intention of the large unilateral transfers from west to east, although in this case, there

[1] "The pattern developing can hardly be satisfactory. It is one where firms serving proximate markets have been expanding, at times even rapidly, while firms producing for export continue to stagnate or even to shrink further. Just as before, the economy of eastern Germany continues to play only a marginal role in the supraregional division of labor." (DIfW and IfW [1994:7]). (My translation.)

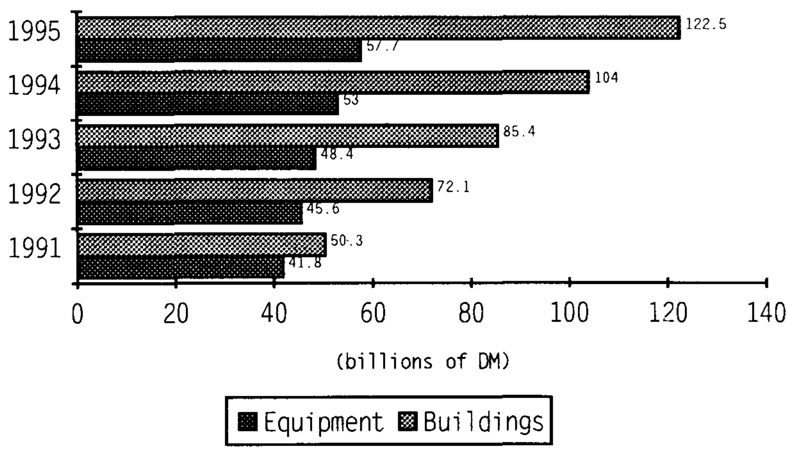
is an additional benefit that transfers need not be repaid. While there is no doubt that, by stimulating aggregate demand, large investments are responsible for a great deal of the aggregate growth in eastern Germany, it is another question, however, to what extent the capacity being installed will result in higher **future** productivity.

Table 4
Composition of gross investment in eastern Germany
(as percent of total)

	1991	1992	1993	1994	1995[e]	1991-95
Equipment	45.4	38.7	36.0	33.8	32.0	36.1
Buildings	54.8	62.3	64.0	66.2	68.0	63.9
Memo:						
Total	92.1	117.7	134.2	157.0	180.0	680.0
(in billion deutsche marks)						

Source: Siebert [1995:8, Table 2].
e = estimate

Figure 5
Gross investment in eastern Germany



Source: Siebert [1995:8].
*1995 figures are estimates.

Table 4 (and Figure 5) above point to a part of the problem: as much as 64 percent of investment over the period 1991-95 has taken the form of buildings, while only slightly more than a third has gone into machinery and productive equipment, which represents some 20 percent of GDP. This fact is consistent with the expansion of the construction industry and its suppliers, noted earlier. The continuation of such a pattern, however, casts some doubt on whether the current growth rates can be sustained into the future. For the high current growth rates still appear to be dominated by the demand-augmenting aspect of investment, rather than the supply- or capacity-creating effects. Given the pattern noted, indeed, it appears unlikely that the capacity being created by current investment is likely to pay back fully in terms of production of industrial goods and tradeables in particular.[2] The only manner this may make a difference is if one allows that the infrastructure thus created may be the binding constraint on the eastern relocation of otherwise competitive firms.[3]

Nations and Regions

In many ways, the current discussions regarding the "transition" or "catch-up" that eastern Germany must accomplish are still remarkably dominated by concepts more appropriate in dealing with two countries, rather than two regions. This much is suggested for example, when "convergence" criteria appropriate to nations are used (see, e.g. Siebert [1995]).

Following that viewpoint, it would then seem that the singular problem to be confronted is how to restore capital stock per head to a level required to attain the (perhaps scaled down to 100-*x*) target output or income per head. The reason eastern adjustment is taking time is thought to be simply that the inherited capital stock has proven unproductive. "Catch-up" then simply means replacing that capital stock with new capital endowments that permit higher productivity growth.[4] The corresponding expectation then

---

[2]This is also part of the reason for being less than sanguine over the mere size of investment spending in eastern Germany.

[3]Note that the same plausible argument about providing fundamental infrastructure may be used in defending the expansion of the nontradeables sector partly from foreign flows (e.g. the real estate boom) in the Philippines; whether this argument is valid under prevailing conditions, however, is still an empirical matter.

[4]The work of the Treuhandanstalt (THA) in privatizing taken-over state assets may be viewed in this context as attempts to reflect the true (lower) market replacement costs of existing physical assets. The lower valuation and sale of these assets would make production using them financially viable.

appears to be that the previously existing **pattern** of output and employment may simply be restored. Hence, the problem appears to be a simple question of sufficient investment, possibly with a large degree of unilateral transfers. From this also follows the idea that the time and pattern of adjustment merely involves a case of leading and lagging processes, a "J-curve" phenomenon, where things get worse before they get better.

A completely different viewpoint is opened up, however, if we realize that what has occurred is the transformation of what was hitherto a separate country into a region. In the matter of "convergence," for example, in some ways to speak of Poland catching up with the United States (US) may strain credulity but remain plausible. This is less true, however, when speaking of how Appalachia can catch up with the eastern belt in the US in terms of industry, or of Batanes "catching up" with Metro Manila. In other words, there are more reasons to think nations may "converge" with others, than for equality across regions in the same country to prevail.

It was Paul Krugman, as usual, (e.g., Krugman [1990] and Krugman and Obstfeld [1994]) who recently turned on the spotlight on the differences between interregional and international economics. Regions turn into nations owing mainly to be interventions of governments in the form of barriers to trade, barriers to the mobility of labor and other factors, and separate currencies. Turn this around, and one realizes that what turns a former nation into a region is the **removal** of such obstacles. This applies, of course to German reunification, which involved the introduction of a common currency and the unification of wages.[5]

What is relevant in this respect is the extremely important observation (simply made in Krugman and Obstfeld [1994:182]) that the pattern of specialization of regions — unlike that of nations — is based on **absolute** rather than **comparative** advantage. Because of exchange rates and wage differentials, two countries may continue to produce the same range of goods, even if one is absolutely less efficient than another. This is not so when speaking of regions in the same country, however, since having the same currency and same level of wages (because of labor mobility) will eliminate such cost differentials. As a result, the allocation of economic activities across regions in a single country will be such that industries will locate in a region

[5]This must be qualified; the equalization of wages occurred not primarily through actual labor mobility but by fiat.

only if there is an absolute superiority in productivity (or costs) that can be found there. A brief proof of this point is provided below.

Simple Analytics

The prediction of theory is that if wages between two regions are equalized, then employment in any particular sector moves toward that region in which **absolute advantage** exists, i.e., where the cost of producing any good is lower in terms of the (common) currency and wage. In simple terms, however, this merely reflects productivity.

Take a simple Ricardian model with labor-inputs, and let a_i and A_i denote labor-input requirements of good i in the East and West, respectively. Let

$$a_i = \beta_i A_i \qquad \beta_i > 0, \text{ for all } i \tag{1}$$

or alternatively

$$a_i / A_i = \beta_i \tag{2}$$

where β_i measures the **absolute disadvantage** (respectively, **absolute advantage**) of East in product i if $\beta_i > 1$ (respectively if $\beta_i < 1$).

Suppose there were two distinct currencies. Then the cost of good i in each country's domestic currency would be $a_i w$ and $A_i W$, where the wages are w and W in East and West, respectively.

With two countries, goods may then be ordered according to decreasing **comparative advantage** for the East.

$$a_1 w/A_1 W < a_2 w/A_2 W < \ldots < a_k w/A_k W < \ldots < a_{n-1} w/A_{n-1} W < a_n w/A_n W \tag{3}$$

Alternatively, using the β_i and denoting the wage differential w/W as ω this may be written as:

$$\beta_1 \omega < \beta_2 \omega < \ldots < \beta_k \omega < \ldots < \beta_{n-1} \omega < \beta_n \omega \tag{4}$$

With distinct currencies and an exchange rate e, the pattern of trade would be divided according to whether for any kth good:

$$e < \beta_k \omega \text{ or } e > \beta_k \omega \tag{5}$$

or what is the same thing:

$$e < a_k\omega/A_k W \text{ or } e > a_k\omega/A_k W \tag{6}$$

Suppose the pre-unification allocation of trade was such that for the k^*th good it was true that:

$$e < \beta_i \omega \qquad i > k^* \tag{7}$$

so that goods $k^*+1, ..., n$ would be imported by the East and exported by the West, while

$$e > \beta_i \omega \qquad \text{for all } i < k^* \tag{8}$$

so that goods $1,..., k^*$ are exported by the East and imported by the West. The necessary condition for this to occur is that there must be some goods i for which the above is true, that is:

$$e/\omega > \beta_i. \tag{9}$$

This means the comparative disadvantage of East is less than e/ω, or what is the same thing:

$$eW/\omega > \beta_i. \tag{10}$$

This is obviously more likely to be fulfilled the higher is the exchange rate, the lower is the Eastern wage than the Western wage, and the smaller is β_i, the absolute advantage.

Reunification however has set $e = \omega = 1$. Hence it will be obvious that (9) or (10) will be fulfilled only for those goods where

$$1 > \beta_i \tag{11}$$

which can be rewritten as:

$$1 > a_i/A_i, \qquad \text{or } A_i > a_i$$

That is, for those goods where the East has an **absolute advantage**. All other goods will be produced in the West.

Recapitulation

The upshot of all this is that under a natural adjustment process, the only activities that would remain in the east would be those where the east had an absolute advantage. Complications arise, however, since such activities are not likely to be very numerous. Klaus von Dohnanyi [1995], the former mayor of Hamburg and currently chairman of the oversight board of a Leipzig firm makes a good point in noting that:

> *... it should be clear that the de-industrialization of East Germany did not begin with reunification but with the partition. Communist domination had slowly driven away the most important firms and brands from the Soviet zone into the western market.*
>
> *Hence, for example, Siemens left Berlin for Munich in 1945; Zeiss moved from Jena to Oberkochen, Audi transferred from Zwickau to Ingolstadt, BMW from Eisenach to Munich and Regensburg, and Hauni from Dresden to Hamburg. The old Bundesrepublik was necessarily the "whole" of Germany on a smaller area. In 1990, therefore West Germany lacked for nothing in providing the entire, reunited Germany with goods and central services. The West possessed all the free German markets.* [Author's translation]

In short, at the time of reunification, most of the globally competitive firms were **already** located in the west, leaving little room for east German firms to make a similar mark in "supra-regional" markets.

On the other hand, following the argument, the locally served markets and nontradeables may be retained for certain, and it is no surprise that the recovery has been strongest in these types of sectors, apart from the transferled construction boom. In the same vein, the shrinkage of eastern manufacturing activities discussed earlier may also be explained as part of this regionalization of industrial activity. Investment likewise would tend to flow toward those sectors where proximate markets are rising, and these consist again of nontradeables, such as housing, buildings, and goods of regional scope (also noted by Siebert [1995:5]). Finally, the decline in employment and continuing high unemployment may be attributed to the collapse in the range of viable goods that may be produced, given the prevailing wages and productivity-differentials. All of these aspects of recent growth in eastern Germany may therefore be explained in the framework sketched above.

It will be seen, therefore, that a sensitivity to the regional dimension of the problem, provides a unified explanation of some specific features of economic adjustment in eastern Germany, which is not accessible from a simple macroeconomic investment-explanation.

Dohnanyi is probably right. On the other hand, much of the social dissatisfaction with reunification among the *Ossis* is undoubtedly due to the quite unprecedented adverse effect of the reunification on living standards, and the long delay in the catch-up with the West.

What is being argued here is that this should not have been totally unexpected: given the underlying conditions of reunification, it could not have been otherwise.

Conclusion

For outsiders, the main insight to be drawn from this discussion is the need to moderate expectations regarding the magnitude and length of time involved in the "catch-up" of eastern Germany. It is suggested here that the final picture of the eastern German economy may yet be quite different from the previous pattern that existed: that even in the long run, notwithstanding what are regarded as maximally justifiable amounts of flows of western assistance, some eastern *Länder* may end up quite far from what is currently being targeted. To go beyond that "natural" allocation would require either a conscious revision of the wages and social safety-net policies, or even larger transfers and investments in infrastructure. Neither of these is likely to be unanimously popular: the first, not in the east, since it would affect current living standards, and the second, not in the west, since it would mean a greater tax burden.

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Appendix A
Economic data on the former East Germany, 1994
(former West Germany = 100)

Gross domestic product (GDP) per capita	49
GDP growth	400
Public investment per capita	188
Private investment per capita	155
Average wages	72
Disposable income per capita	63
Cash balances per capita	32
Steueraufkommen: Tax revenues per capita	22
Industrial employment per capita	58
Apprenticeships per capita	37
Tourist overnight stays per capita p.a.	59
Exports per capita	7.5
Shipments to rest of Germany	5

Source: *Der Spiegel* 29 [1995:75].

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The European Studies Program at the University of the Philippines began with an initial research on "The Philippines and the European Community: Policy Issues." This research facilitated the constitution of an interim working group tasked with the responsibility of conceptualizing a research program that aims to enlighten the nation's economic and political policies toward the European Community.

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For further information, contact: The Executive Director, UP-CIDS, UP Diliman, Quezon City. Tel. Nos. 929-35-40 and 928-96-91.