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EUROPE

Making European Reforms a Success on the Ground

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Contents

Making European Reforms a Success on the Ground[1]

Executive Summary

Europe's medium-term growth prospects remain subdued. There is broad recognition that growth need not be this low, and there is also a common understanding of what is standing in the way. Yet, decisive policy action has been lacking. One reason is that there is uncertainty around the size of the gains and how they are distributed. This Note advances the debate by estimating the potential of policy packages aimed at closing structural policy gaps through national and single-market reforms, and showing how they would play out at the regional (within-country) level.

Fully eliminating domestic structural policy gaps to the global frontier and lowering intra-European Union (EU) cross-border barriers to trade and labor mobility to those observed within the United States (US) would raise EU productivity by 20.2 percent. Considering second-round effects through higher investment, such a package would nearly close the per capita income gap with the US. An intermediate reform package where all these gaps are halved would still yield substantial productivity gains of 8.7 percent.

Tracing out the adjustment process "on the ground" helps assess how policies will affect firms and households within countries. The Note's analysis shows that Europe's productivity gap is foremost driven by inefficiencies in European production hubs where firms cluster, which account for about 60 percent of EU GDP. Coordinating EU-level policy initiatives to deepen the single market with domestic structural reforms would unlock the underlying constraints, and lead to an increase in intra-EU trade and labor mobility. As a consequence, existing production hubs would grow, new hubs would emerge in high-potential regions, and productivity and income increase. All countries and most regions would gain from reforms. As workers relocate, some regions within countries might see productivity fall, but the reduction would be a small share of the total gains.

In addition to structural reforms at the national and EU level, the findings of the Note call for carefully designed policies to maximize gains at production hubs (for example, ensuring affordable housing and through policies targeting spillovers) while providing support to lagging regions without hindering the benefits from agglomeration (for example, through contributions to national and EU budgets that scale up with economic activity to support the continued provision of key services).

Europe Needs Higher Growth

Higher growth is the cornerstone for addressing Europe's most significant challenges (see Note 1 in this report), yet the outlook remains weak. The EU's per-capita GDP in purchasing power parity (PPP) terms is nearly 30 percent lower than in the US, with around three-quarters of the gap due to lower productivity (Figure 2.1). Under current projections, there is no sign of convergence to US GDP per capita levels—indeed, Europe's income gap could be widening slightly (Figure 2.2).

In line with flagship EU diagnoses (Letta, 2024; Draghi 2024), a number of recent IMF studies have set out recommendations to put European growth on a substantially higher trajectory (Adilbish and others 2025; Arnold and others 2025; Budina and others 2025; Kammer 2025). These recommendations fall under five broad priority areas:

(1) Closing domestic structural policy gaps to the global frontier.
(2) Tackling remaining intra-EU trade costs.
(3) Removing barriers to intra-EU labor mobility.
(4) Advancing the Capital Markets Union.
(5) Having a single market for energy.

Despite broad agreement with these policy priorities, decisive policy action has been lacking, reflecting, among other things, uncertainty around the size of the gains and the impact at the country and local level. This puts a premium on the design of policy packages that seek to maximize complementarities from different reforms, including from a political-economy standpoint by each bringing along different constituencies.

Figure 2.1. Decomposition of GDP per Capita Difference with the US
(in PPP terms, 2024)
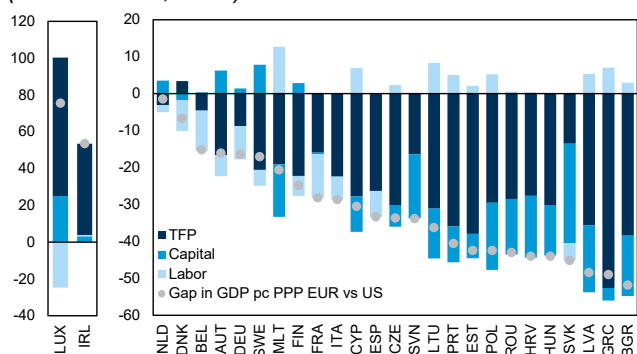
Sources: AMECO; IMF, World Economic Outlook database; and IMF staff calculations.
Note: For France, the 2023 capital stock value was used for 2024 and 2025 because of data unavailability. Data labels in the figure use International Organization for Standardization (ISO) country codes.

Figure 2.2. GDP PPP per Capita Forecast
(United States, 2019 = 100)
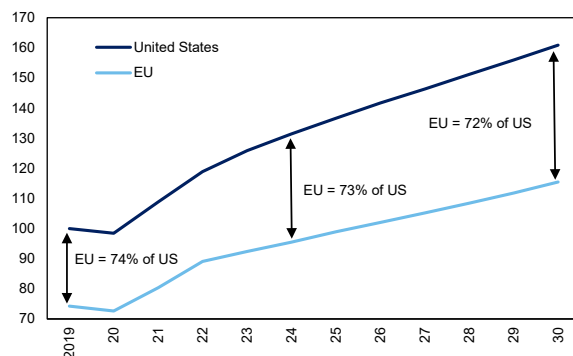
Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: Current PPP. For the aggregate of EUR countries (including also Albania, Belarus, Bosnia and Herzegovina, Iceland, Israel, Kosovo, North Macedonia, Moldova, Montenegro, Norway, Russia, Serbia, Switzerland, Turkey, Ukraine, and the United Kingdom) the ratio to the US is equal to 71 percent in 2019 and 69 percent in 2030.

This Note advances the debate by sizing up the effect of a package of national and single-market reforms and showing how they would play out "on the ground"—that is, by examining how policies will affect firms and households not only at the country but also at the regional (within-country) level. Lifting aggregate productivity requires making Europe's production hubs where firms cluster more productive. Throughout, this Note uses employment density to measure the extent of such clustering. The top one-third of EU regions by employment density accounts for 60 percent of EU GDP, highlighting their importance for aggregate productivity. Furthermore, both in Europe and beyond, it is well known that production hubs (for example, Silicon Valley, the Benelux corridor, Bavaria's high-tech manufacturing area, or the Ile-de-France region) confer a productivity advantage—often referred to as "agglomeration externalities." This productivity advantage stems from allowing businesses to share deeper pools of resources like talent or infrastructure, accessing larger product markets (including those of other regions), and learning from each other. Effective reform packages can make all production hubs more productive, allow existing and new hubs to grow, and help all regions, including less populated ones, to gain.

Fully exploiting the advantages from agglomeration can raise productivity by attacking the causes behind Europe's ailing business dynamism (IMF 2024), adding a critical spatial perspective to the deficiencies constraining European firms over their life cycles. Using production hubs as platforms, access to large product markets can help large, leading firms reach full scale and thereby be able to finance the fixed costs from innovation. Drawing risk capital from across the continent can further help these large firms shield innovation efforts from business cycle fluctuations. Earlier in firms' life cycles, by fostering learning from others, production hubs are typically

startups incubators. These startups can become young, high-growth firms if they can rely on the ability to draw the best talent, and count on deep pools of venture and scale-up capital. Strong competition for resources in production hubs further incentivizes innovation, and—under the right local conditions—lead the least productive firms to exit, allowing their talent and capital to flow to other firms.

The analysis in the Note proceeds in three steps. *First*, the Note presents the results from a new framework that can help uncover the regional impact of jointly tackling (1) domestic structural policy gaps, (2) internal trade barriers, and (3) obstacles to labor mobility (Section "Reforms Can Deliver—Big Time"). Pursued jointly, fully closing the EU's gaps in these areas could lift the level of EU GDP by 20.2 percent. A still ambitious but more immediately feasible goal of closing half the EU's gaps would lift EU GDP by 8.7 percent. *Second*, the Note shows how these reforms would help fix the current productivity underperformance of Europe's production hubs (Section "A Closer Look at How Reforms Affect Europe's Hubs"). This underperformance is linked to tepid private sector dynamism and small sales markets, as well as cross-border barriers that prevent talent and capital from moving to opportunity. *Third*, the Note shows that benefits from reforms are broad based, with most reforms benefiting all countries. Gains accrue not only to highly populated (high-density) regions hosting large cities but also often to middle-density regions. However, some low-density regions could see lower productivity because of out-migration, when intra-EU labor mobility barriers are eased. Policy packages that frontload domestic reform efforts in lagging regions can effectively contain these negative spillovers (Section "Who Gains and Who Lags Behind"). The Note concludes by outlining how carefully designed policy packages can unlock Europe's productivity potential while making sure gains are widely shared (Section "Policy Levers to Make Europe's Reforms a Success on the Ground").

Reforms Can Deliver—Big Time

A Framework to Study Reform Packages and Their Effects at the Regional Level

A quantitative spatial model can help size up the benefits from key reforms. The Note uses a general equilibrium model building on Redding (2016) with heterogeneous regions, internal economies of scale in production, costly trade between regions, and worker mobility decisions. Regions differ in potential productivity, their inherent attractiveness to workers (for example, climate, local culture), and a fixed stock of consumable and non-tradable local amenities (for example, housing). The model is significantly extended to incorporate agglomeration externalities—where the productivity of all firms in a region is lifted by higher total employment in the region—and firm heterogeneity in the "intrinsic" productivity and the distortions faced by firms. Since there is only one factor production, it can be instructive to think of it as equivalent to a composite input that includes both labor and capital—that is, "equipped labor." However, while the next section will offer a brief discussion of the role of venture capital in the EU single market, the Note will calibrate factor mobility counterfactuals based on spatial employment

Figure 2.3. Per-Capita Income Gains from National and EU-Level Reforms
(Percent)
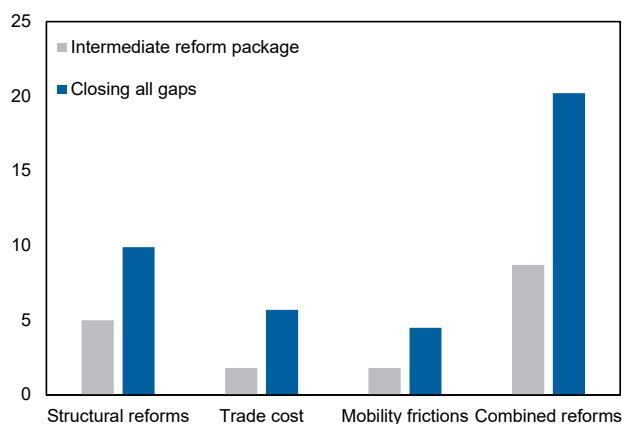
Source: IMF staff calculations.
Notes: Estimated long-term output per worker gains from structural reforms, lowering trade costs, and lowering mobility friction at the aggregate EU level. Structural reforms lower dispersion in estimated firm-level wedges in each region. Trade costs lower estimated (within EU) trade costs to close the gap with estimated intra-US trade costs. Mobility frictions lower the barriers to labor reallocation to close the spatial pattern of output per worker and employment density (workers per square km) gaps with the US. "Combined reforms" estimates the impact of the three reforms implemented together.

patterns and leave a more explicit modeling of the role of capital to future work. Compared to previous studies, the model allows for the joint analysis of national-level efforts to address resource misallocation at the local level and EU-level reforms that tackle cross-country barriers to trade and factor mobility. While these features by themselves make the analysis novel, the model also allows estimating the effect of these policies for different regions within countries.

The model, described in detail in the Online Appendix, is calibrated to match employment, output, and estimated trade costs of NUTS2 (where "NUTS" denotes Nomenclature of Territorial Units for Statistics) regions in the EU.[2] In the calibrated economy, higher real wages and lower trade costs (inferred from higher labor productivity and more trade in the data) make denser regions attractive locations to live in. However, these advantages are partially offset by higher amenity (for example, housing) prices—driven by congestion—that discourage further employment, despite potential economic benefits. The calibrated model is used to simulate the long-term aggregate and spatial implications of key policy interventions and their interactions. Because aggregate EU employment is fixed and there is no capital accumulation in the model, the aggregate benefits from all simulations should be taken as a lower bound as higher European productivity would in practice attract skilled workers from other regions and foster investment, both of which would add to the resulting income and productivity gains.

Aggregate Gains from Reforms Are Large

Fully closing European countries' domestic structural policy gaps and removing remaining cross-border obstacles to trade and labor mobility would lift EU productivity (equivalent to per capita income in the model) by 20.2 percent (Figure 2.3).[3] The reform agenda would require, *first*, fully closing EU member states' domestic structural policy gaps to the global frontier in priority areas (Budina and others 2025). *Second*, reducing intra-EU trade costs to the level estimated to prevail between the states in the US (see Box 2.1). *Third*, reducing labor mobility barriers to match the (much higher) US sensitivity of how employment flows to productivity (see next section, Figure 2.5). Around half of the total gains (9.9 percent) stem from national-level efforts, whereas the other half is because of the deepening of the single market (reducing trade costs: 5.7 percent; mobility friction: 4.5 percent).

A still ambitious but more immediately feasible *intermediate* reform package where all structural gaps are halved would yield lower but still substantial gains of 8.7 percent in the aggregate. While fully closing the gaps should be the end goal, the remainder of this Note anchors the discussion on efforts that, by closing half of the

Figure 2.4. Gains from National and EU-Level Intermediate Reform Package across Countries
(Output per worker gains by country group)
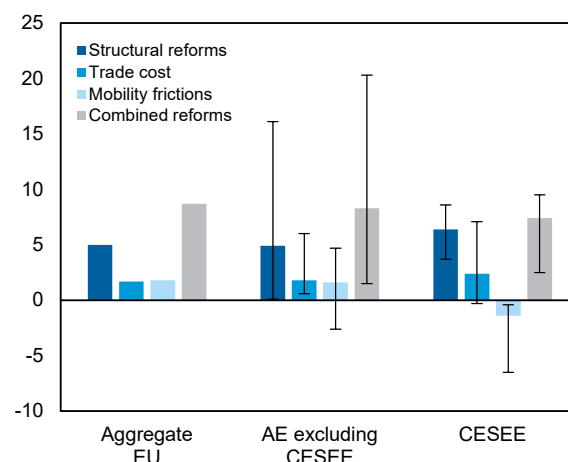
Sources: Eurostat; Orbis; and IMF staff calculations.
Notes: Estimated long-term output per worker gains from structural reforms, lowering trade costs, and lowering mobility friction at the aggregate EU level and by country grouping. Advanced Economies (AE excluding CESEE) includes the model economies based on data for AUT, BEL, DEU, DNK, ESP, FIN, FRA, ITL, NLD, PRT, and SWE. Central, Eastern, and Southeastern Europe (CESEE) countries includes the model economies based on data for BGR, CZE, HUN, ROU, SVN, and SVK. Structural reforms lower dispersion in estimated firm-level wedges in each region. Trade costs lower estimated (within EU) trade costs by half of the between EU country and state gap in the US for each bilateral region pair in different countries. Mobility friction lowers the barriers to labor reallocation to close half of the spatial pattern of output per worker and density gap with the US. Combined estimates the impact of the three reforms implemented together.

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[2] Nomenclature of Territorial Units for Statistics (NUTS) is a geocode for administrative divisions of countries in the European Union. NUTS regions are classified at three levels ranging from NUTS1 (largest/coarsest) to NUTS3 (smallest/most granular).

[3] As noted, these results do not account for second-round effects from the EU attracting more capital and talent as productivity increases. The Online Appendix includes details on how to assess the additional impact of the EU attracting foreign talent as a result of becoming more productive, with the effects being nonnegligible but modest compared to the large aggregate gains. In terms of the additional gains from capital accumulation, a back-of-the-envelope calculation implies that productivity gains should magnified by a power of about 1.5 based on long-term stationarity of the capital-output ratio and a common capital share of 1/3 (specifically, productivity gains of 20.2 percent are magnified by a factor $1.202^{(3/2)}$, where (3/2) is the inverse of 1 minus the capital share). In the full reform scenario, accounting for capital accumulation would therefore narrow the 2024 EU per capita GDP current PPP gap with the US of 27.4 percent to 4.4 percent. Explicitly modeling capital may also affect the benefits of reallocating production resources across regions, although, at a first pass, this would likely be similar to the benefits of reallocating labor across regions as, in the simulated model, labor could be considered as a composite input including other factors of production (that is, equipped labor).

observed structural gaps, can be considered a downpayment on achieving even deeper reforms and larger payoffs.

A Package of Reforms Would Lift All Countries

All countries gain when reforms are pursued jointly (Figure 2.4, gray bars).[4] This implies that in a coordinated push of domestic and EU-level reforms, mechanisms to redistribute *at the national level* can go a long way in helping share gains widely whenever some specific regions fall behind (see next section). Focusing on the intermediate package, by reform, the effect on countries is as follows:

- A concerted push of *domestic structural reforms* to close half of the existing structural gaps across Europe increases productivity by 6.4 percent in the EU Central, Eastern, and Southeastern Europe (CESEE) region and by 4.9 percent in EU advanced economies excluding CESEE (Figure 2.4, dark blue bars). The EU CESEE region benefits more from these reforms given higher initial distortions, consistent with the findings in Budina and others (2025) of larger gains from structural reforms in this region.[5] While the simulated reform effort is a concerted one, in practice there are strong incentives for coordination. Under uneven reform implementation, stronger reform regions gain the most while laggard reformers lose workers and productivity, owing to scale economies.

- *Reducing trade barriers* to halve the distance to their intra-US level increases EU productivity by about 1.8 percent (Figure 2.4, blue bars). Productivity gains in the EU CESEE region (of 2.4 percent) are in the aggregate slightly higher than those in EU advanced economies excluding CESEE (of 1.8 percent). While regions in EU advanced economies benefit more through higher initial trade openness, EU countries in the CESEE regions have a larger scope for reducing policy-related trade barriers.

- *Reducing mobility barriers* so that the gap between Europe and US in how much employment rises with real wages is halved would increase aggregate output by about 1.8 percent, but the policy results in a starker reallocation between countries (Figure 2.4, light blue bars). Productivity in EU advanced economies excluding CESEE countries increases by 1.6 percent while productivity in the EU CESEE region declines by 1.4 percent if this reform is pursued in isolation as economies of scale and agglomeration spillovers unwind.[6] The significant migration associated with this reform being carried out in isolation implies that EU CESEE GDP declines further (see Online Appendix).

Some reforms exhibit positive feedback loops. Domestic structural reforms, when combined with lower intra-EU trade costs, would amplify aggregate gains by enabling the most productive firms to fully leverage increased market access and improve the allocation of resources to these firms. This complementarity corresponds to a gain of about 0.1 percentage point relative to the individual gains from structural reforms and trade integration alone. While domestic reforms do not exhibit this complementarity with labor mobility reforms (as higher labor mobility leads to some workers moving away from the regions that gain the most from structural reforms), domestic reforms help ensure that the EU CESEE region directly gains in the aggregate even if aggregate EU-level gains are not shared across countries.

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[4] Firm-level data for the calibration are taken from Orbis. Orbis generally has excellent coverage of firms in European economies including by NUTS3 regions (see Online Appendix). However, some countries have biased samples (for example, Italy, Finland, Slovakia, Slovenia) in that small firms are underrepresented, as noted by Kalemli-Ozcan and others (2024), that may affect individual-country results. More generally, the calibration involves extensive data requirements, and as a result the simulations capture about 80 percent of NUTS2 regions in the EU. The note therefore avoids drawing conclusions on specific countries.

[5] While distortions in the CESEE region are on average larger, the dispersion of structural reforms (the whiskers in Figure 2.4) are wider in advanced economies. This reflects that some advanced economies are more open economies, and therefore gain not only through their own domestic structural reforms but also from spillovers from lower-cost traded imports stemming from domestic structural reforms abroad.

[6] EU-wide productivity gains (of 1.8 percent) are larger than the productivity gains in each of the two country groupings (of 1.6 and 1.4 percent). This is because EU productivity is also boosted by reallocation of labor from lower-productivity regions (in CESEE) to regions with higher productivity (in advanced economies).

A Closer Look at How Reforms Affect Europe's Hubs

The simulation results in the previous section highlight that aggregate reform gains—both for Europe as a whole and at the country level—are large. Before taking a closer look at regional-level results to uncover the extent to which lagging regions would need support (see next section), this section documents the current underperformance of Europe's production hubs and provides evidence that this underperformance is indeed driven by the barriers that the simulated policy package tackles.

Linking Europe's Productivity Gap to Underperforming Production Hubs

The simulations discussed earlier are based on the stylized fact that production hubs can significantly enhance the productivity of workers and firms. Many studies have found a positive relationship between the productivity of a region and its employment density (employment per square km) through agglomeration externalities.[7] When many firms are close to each other, productivity tends to be high as firms can leverage deeper pools of common resources (such as talent and infrastructure), scale economies from larger product markets, and learning from other firms.[8] These sources of productivity growth may have become especially important as the rapid development of information technology made it easier for lead firms to scale up, amplifying the advantages of being close to talent, customers, and ideas. Leveraging the benefits from concentration requires a location to offer adequate infrastructure, a conducive regulatory environment, access to financing, and a well-integrated labor market with the appropriate skills to meet business needs. It also requires that resources like capital and labor can flow freely to locations where they can be used most effectively.

There is also strong evidence that, while Europe does not lack production hubs, it benefits only modestly from them. The US, which has outpaced Europe in productivity growth (IMF 2024), can provide a useful benchmark. Europe's NUTS3 regions have on average higher employment density than US counties, and Europe has its share of very dense production hubs (for example, the regions including the major cities: Bucharest, Copenhagen, Munich, Paris).[9] However, regions with a one percentage point higher employment density have on average only two-thirds of the higher labor productivity than in the US (Figure 2.5).[10]

Modest benefits from agglomeration are common across Europe. In the four largest euro area countries (France, Germany, Italy, and Spain), as well as in the United Kingdom, productivity rises even more weakly with density than the EU average. Countries where productivity increases the most with employment density are mostly smaller economies (for example, the Baltics, Ireland) for which estimates are noisy and often driven by outliers, such as the capital city or major metropolitans (Figure 2.6).

How Reforms Can Raise Hubs' Productivity by Unlocking Key Local Productivity Levers…

The simulations discussed earlier are based on the notion that the strength of the agglomeration externalities present in a region depends critically on its local conditions. The literature suggests that key productivity levers related to the location in which firm operate include access to large product markets (which is a function of physical location and trading costs), the degree of financial development, the quality of local infrastructure and human

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[7] Ahlfeldt and Piestrostefani (2019) offered a meta-analysis of the findings in the literature; see also Rosenthal and Strange (2004) for an earlier survey. Examples of country-level analyses include Ciccone and Hall (1996) for the United States, Combes and others (2012) for France, and Ahlfeldt and others (2015) for Germany.

[8] These benefits can happen both *generically*–for instance by increasing research and development intensity (Ramondo, Rodríguez-Clare, and Saborío-Rodríguez 2016), knowledge diffusion (Buera and Oberfield 2020), or providing a larger local demand–or through higher degree of *specialization*, which allows firms to exploit labor market or supplier pooling. This Note does not distinguish between the two mechanisms.

[9] The comparison excludes the most sparsely populated areas in both economies (those with less than 10 employees/km^2), where different economic forces are likely at play. In particular, labor productivity decreases in employment density for very sparsely populated counties in the US, with the structural break happening about 10 employees/km^2. Online Appendix Section I contains more details; Michaels, Rauch, and Redding (2012) documented a cut-off of 7 people/km^2.

[10] Labor productivity represents output per worker. For each dot, productivity is measured relative to the average productivity in Europe (for NUTS3 regions) and the US (for US counties). Differences between Europe and the US thus only stem from agglomeration benefits rather than the well-documented higher overall US labor productivity.

capital, the quality of the research and development ecosystem, and a friendly business environment (Rosenthal and Strange 2004; Duranton and Puga 2020).

Figure 2.5. Labor Productivity Rises Slowly with Employment Density in Europe
(Labor productivity and employment density for 2021)
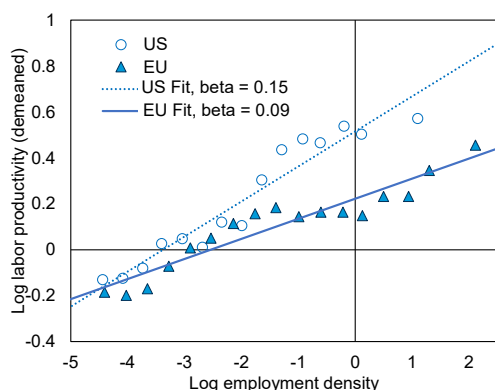
Sources: American Community Survey; Eurostat; Bureau of Economic Analysis; and IMF staff calculation.
Notes: The bins are defined over log employment density (employment per square km). Each dot represents the average of the observations in the bin. Regressions are conducted over the full sample. The elasticity is estimated using within-region variations following the demeaning.

Figure 2.6. Most European Countries Benefit too Little from the Concentration of Activity
(Elasticity of labor productivity to employment density)
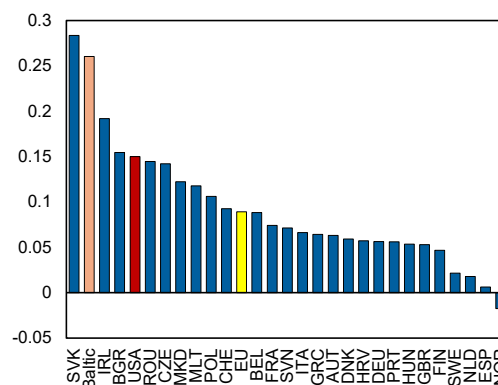
Sources: American Community Survey; Bureau of Economic Analysis; Eurostat; OECD; and IMF staff calculation.
Notes: The elasticity is estimated for each country of each year (data availability varies by country) and the bar represents the average elasticity over time. Baltic includes EST, LVA, and LTU. Data labels in the figure use International Organization for Standardization (ISO) country codes.

A simple empirical exercise exploiting variation across Europe in how different key local conditions raise productivity reveals that the two key conditions for productivity emphasized in the simulations are insufficiently tapped by production hubs: the presence of a vibrant private sector (proxied by the share of employees in the private sector) and market access (proxied by the average income of a region's trading partners, weighted by the inverse of bilateral trade costs).[11]

Although these results, strictly speaking, reflect correlations rather than causal relationships, the estimated effects are substantial. For example, conditional on employment density and level of human capital, increasing market access and private sector presence from their median to the upper-quartile (75th percentile) levels could boost labor productivity by 2.9 and 2.0 percent, respectively (Figure 2.7).[12]

Strengthening private sector activity by addressing the remaining significant domestic structural policy gaps can deliver large benefits. With the estimated intra-EU barriers significantly higher than the level that US firms face when selling across states in the US (see Figure 2.8), and with even higher barriers between the EU and the rest of the world (Box 2.1), there is also significant scope for increasing market access for Europe's production hubs.[13]

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[11] Specifically, labor productivity is regressed on employment density and covariates capturing all the key local conditions identified in the previous paragraph. When all the drivers are considered jointly, only human capital, private sector size and market access remain statistically significant. Univariate regressions reveal density is rendered statistically insignificant with the inclusion of human capital but not by private sector size and market access—pointing to European hubs underexploiting these latter two levers. These findings are also consistent with the findings in Ehrlich and Overman (2020) that benefits from agglomeration in Europe mostly operate through the availability of educated workers, though further gains could still be reaped from better allocating this talent (see the next subsection).

[12] Here only market access and private sector activity are considered because human capital explains much of the correlation between labor productivity and density. Visually, in the context of Figure 2.5, increasing human capital increases labor productivity corresponds to "moving along the regression line," while improving the other factors shift a point orthogonally to the line. As such, it is difficult to increase human capital while keeping density fixed.

[13] The intra-EU trade barrier estimates in Figure 2.8 and Box 2.1 are based on a global sample of economies, with the states of the US as individual economies, and using aggregated (as opposed to sectoral) manufacturing and mining goods data. The different years (2007, 2012, 2017, and 2022) correspond to vintages for which both state-to-state and state-to-rest-of-the-world trade data are available (no such US data exist for services sectors). Using 2020 sectoral manufacturing data for a sample including only EU economies, IMF (2024) and Adilbish and others (2025) estimated intra-EU ad-valorem trade costs of 44 percent on average across manufacturing goods sectors and 110 percent on average across services sectors.

Figure 2.7. Improving Local Conditions Can Bring Sizable Productivity Gains
(Labor productivity and local conditions [percent of labor productivity])
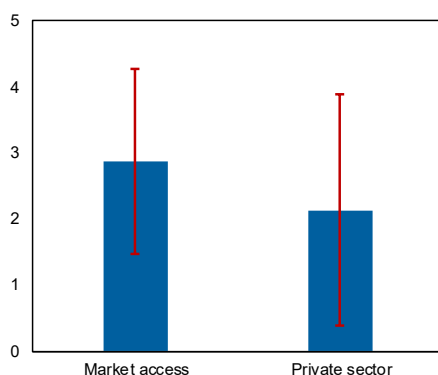
Sources: Eurostat; EU Regional Transportation Costs Database; and IMF staff calculations.
Notes: Increase in labor productivity associated with an increase in each indicator from median to 75-percentile level. The analysis is done at NUTS2 level. "Market access" is proxied by the average income of a region's trading partners weighted by the inverse of trade costs; "private sector," which proxies the business environment, is measured by the share of private employment in total employment (see text). Red line segments represent 95 percent confidence intervals.

Figure 2.8. Estimates of Ad-Valorem Equivalents of Trade Costs
(Percent)
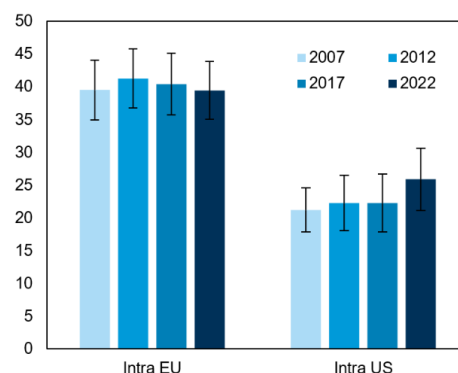
Sources: OECD, US Census; and IMF staff calculations.
Notes: Estimates based on gravity regressions with aggregate manufacturing and mining trade flows (see footnote 10). A common trade elasticity value of 5 is used to compute ad-valorem equivalents. ROW excludes the EU and the US. Whiskers correspond to 90 percent confidence bands. Using sectoral (as opposed to aggregate) data for 2020 (rather than 2022) covering only the EU (as opposed to the world and individual states in the US), Adilbish and others (2025) and IMF (2024) intra-EU ad-valorem trade costs of 44 percent on average across manufacturing goods sectors. See footnote 12.

… And Lifting Constraints Preventing Talent and Capital from Moving to Hubs' Opportunities

There is strong evidence that hub productivity can also be strengthened by ensuring that talent and capital move freely to opportunity as local conditions improve. This supports the third reform layer emphasized in the simulations in the "Reforms Can Deliver—Big Time" section, in addition to the role of market conditions around Europe's hubs and access to markets.

The overall magnitude of these barriers—and conversely the potential reallocation gains—can be sized up using a production-side spatial misallocation model, building on Hsieh and Klenow (2009). The model serves as an accounting tool to measure the gap or "wedge" between firm production costs and wage and investment payments to workers and investors as well as the potential productivity gains from reallocating capital and labor. Higher wedges in more productive regions—the empirically relevant case—cause firms in these regions to underemploy workers and capital.

Overall potential gains from allowing capital and labor to move to economic opportunities both across countries and regions are substantial (Figure 2.9). The cross-country gains are calculated as the potential gains in each sector from reallocating capital and labor across countries, but holding fixed how factors are distributed across firms within each country. The between-region gains are calculated by redistributing factors between regions within each country, keeping fixed how factors are distributed across firms within each region and keeping country-level factor endowments unchanged.[14] Sectoral gains from spatial reallocation depend on the dispersion of wedges and labor productivity across regions and countries.

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[14] Between-region gains are calculated at the NUTS1 regional level. Gains from more granular regional classifications would mechanically be larger.

The results suggest that such reallocation could raise total factor productivity from 5 to over 20 percent, with larger gains indicating a larger dispersion in productivity across locations.[15]

However, not all mobility barriers can be easily reduced. The barriers behind the reallocation gains in Figure 2.9 include nonpolicy ones (for example, language, or preferences to live in certain locations) and those eminently actionable (for example, pension nontransferability, hiring and firing costs) that prevent workers and capital from moving to economic opportunities. It is the latter set of barriers that offer an opportunity to boost productivity.

Obstacles to venture capital mobility can illustrate the role of these policy-actionable barriers stifling regional productivity. The absence of a common legal regime can in part explain Europe's shallow venture capital markets, driving capital misallocation by limiting disruptive new firms from accessing the necessary capital to scale operations. Harmonizing the EU legal system and simplifying withholding tax procedures can help dismantle financial fragmentation, raising cross-border venture capital flows in the EU by about 13 and 20 percent, respectively (Box 2.2).

Figure 2.9. Large Productivity Gains Can also Come from Spatial Reallocation
(Productivity and spatial reallocation [percent of total factor productivity])
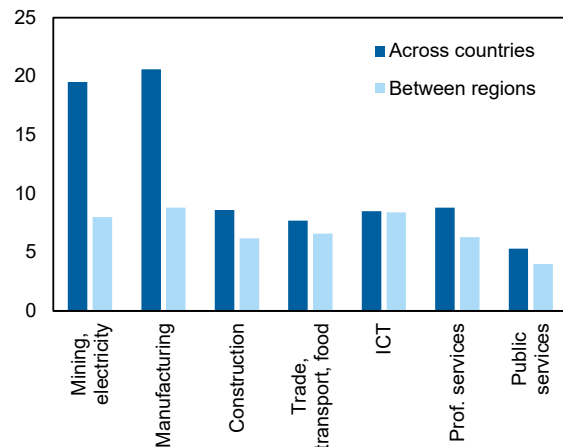
Sources: Eurostat; Orbis; and IMF staff calculations.
Notes: Gains from spatial reallocation are calculated as the percent gain at the EU level from reallocating capital and labor. Across Countries fixes the within region distribution of firms. Between Regions fixes the within region distribution of firms and country-level stock of labor and capital. Regions are at the NUTS1 level. ICT = information and communications technology.

Who Gains and Who Lags Behind

The model used for the simulations shown in the section "Reforms Can Deliver—Big Time" also allows answering the question of how much the proposed reforms help address the hub productivity gap, and what is the effect on other regions. Based on the intermediate reform package discussed earlier, Figure 2.10 shows the impact of reforms by tertiles of the initial employment density (employment per square km) of regions. The results hold three main messages.

First, existing European production hubs would become significantly more effective in turning their density into productivity.[16] In particular, leveraging the EU single market can support agglomeration and boost productivity by allowing existing and potential hubs to expand their markets and access a deeper pool of resources. Lower trade costs increase trade and boost efficiency, enabling regions to exploit internal economies of scale and agglomeration spillovers, further boosting productivity. Gains are higher in medium- and high-density regions that are initially most exposed to trade, and where the scope for reducing policy-related trade barriers is highest. Similarly, when labor mobility constraints are eased, workers reallocate to more productive, typically denser, regions leading to productivity gains from internal economies of scale and agglomeration spillovers and move away from less productive, typically less dense, regions.

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[15] Roughly speaking, the larger potential gains in manufacturing indicate a substantial productivity gap between Europe's most and least productive manufacturing regions. Still, gains are sizable across all sectors.

[16] In the calibrated model, the EU's productivity elasticity to density is of 0.12 (see Online Appendix). The reform package that closes half of the gaps increases the elasticity to 0.14, that is, 40 or 60 percent of the original gap with the US elasticity depending on whether the observed or calibrated EU elasticity is used as reference.

Second, the regions expanding following reforms include both high-density and high-potential regions. Productivity gains in many cases stem from regions that are not currently Europe's densest being able to scale up as growth constraints are eased. For instance, when domestic reforms are coupled with further intra-EU integration, around one-third of the top quintile of expanding regions are initially medium density, and regions with largest gains include those hosting well-known and emerging tech hubs such as those including the cities of Antwerp, Eindhoven, Munich, and Warsaw. In general, the largest winners are what could be called *high-potential European regions*—relatively open regions with low initial employment relative to their high underlying productivity—that can make the most from additional workers.

Third, although the average region sees productivity increase, there are also regions where productivity falls as agglomeration externalities weaken owing to workers migrating to regions with stronger productivity growth. The impact of reforms on regions with falling productivity can be significant relative to their size, but the impact is generally only a small share of the total gains from reforms. In the intermediate reform package including all three reforms (domestic structural reforms, lower trade costs, and lower mobility barriers), productivity in these regions declines by less than 3 percent (employment-weighted average). In the aggregate, the transfers required to restore per capita incomes of those staying in regions where productivity declines to their pre-reforms level represent less than 2 percent of aggregate gains. The small

Figure 2.10. Spatial Distribution of Output per Worker Gains from National and EU-Level Intermediate Reform Packages
(Output per worker gains by region [Percent])
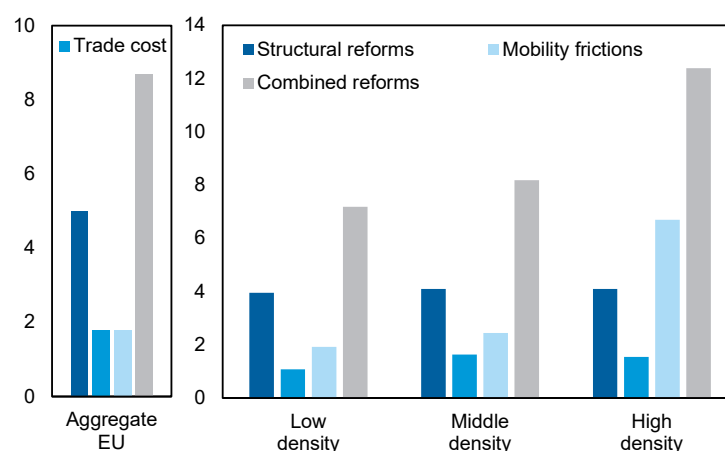
Sources: Eurostat; Orbis; and IMF Staff Calculations.
Notes: The blue columns report the change in output of NUTS2 region in the bottom, middle, and top third of regions from structural reforms. The gray column shows the change in output when combined with a 25 percent decline in within-EU, cross-country trade costs.

aggregate losses despite the large, localized impacts are in part because of regions where productivity declines being Europe's least dense: one-third of regions in the bottom employment density tertile see productivity decline, compared to only about 5 percent in the top employment density tertile. As noted earlier, all countries gain when reformed are packaged together—with a critical role for domestic structural reforms that have broad-based benefits—underscoring the important role that support policies at the national level can play to help share gains widely.

Policy Levers to Make Europe's Reforms a Success on the Ground

The scope for improving European productivity is large. But tapping this potential requires significant policy action at the European, national, and regional levels—and careful policy design to ensure that everyone is better off.

Interplay between European and National Reforms

Early and ambitious domestic structural reforms should be a central pillar of an agenda that aims to boost productivity. These reforms can increase the efficiency of how resources within Europe's regions are utilized, leading to broad-based productivity improvements across regions. National-level efforts should be frontloaded given that they benefit Europe's less dense regions and thereby facilitate adjustment to EU-level reforms. Structural reforms are particularly critical in the CESEE region, where the larger gains from closing more significant domestic structural policy gaps can be essential to continue attracting talent. Labor market regulations that

facilitate reallocation, boosting human capital, improving the growth-friendliness of tax systems, and (in some countries) addressing governance shortcomings are among key priorities (Budina and others 2025).

Deepening the EU single market can deliver large benefits by allowing high-potential regions to increase scale through expanding their customer base and accessing talent and capital. Reducing still sizable intra-EU trade costs would allow productive European firms to expand by accessing a broader customer base. Harmonizing regulations, opening up protected sectors, and addressing shortcomings in cross-border infrastructure are among the measures that would allow Europe's production hubs reach their full potential. Combining these efforts with national structural reforms would deliver larger gains than if each policy is pursued in isolation.

Reducing barriers that hinder the mobility of workers and capital would lead to further aggregate gains by allowing resources to flow to where they can be used most productively, consistent with findings in Arnold and others (2025). Policy priorities include addressing barriers to the portability of pensions, pursuing mutual recognition agreements for professional services, and establishing a 28th corporate regime—a voluntary EU-wide corporate and insolvency framework open to all legal business entities to simplify cross-border firm operations.

Policies to Support Expanding and Lagging Regions

Over and above these priorities, the agglomeration of resources in Europe's production hubs calls for policies to anticipate needs at the local level. In some production hubs, additional workers can intensify congestion already observed in some of Europe's largest cities, limiting the potential for labor reallocation. In these cases, EU policies should be coupled with local policies targeting region-specific barriers. Expanding regions should therefore ensure housing remains affordable, for instance, by easing constraints on housing construction (for example, by adjusting zoning regulations), through targeted and temporary housing allowances (Elfayoumi and others 2021), and scaling up local public services (for example, schools) with the population. High-productivity regions can proactively aim to attract talent by taking an even more holistic view to lifting their appeal (for example, job opportunities for spouses). Policies targeting agglomeration spillovers (for example, investment in infrastructure and education, or joint grant programs for firms and universities) can also be considered to help receiving regions make the most out of new workers.

Policies that aim to share aggregate gains must be carefully designed to avoid unintended consequences. They should avoid discouraging capital or labor from going to where they are most productive, as this can partially undo the desired productivity gains (IMF 2019). Contributions to national and EU budgets that increase with economic activity—for example, through value-added tax collection—can provide automatic mechanisms to share gains, including by using these resources to ensure less dense regions maintain access to key services (Letta 2024; OECD 2025). Place-based policies—which are prevalent in Europe at both national and regional levels—can help with adjustment costs from reforms on a temporary basis, and can also support greater mobility (for example, through investment in education and training). Pairing these policies with structural reforms (for example, through performance-based budgeting) is essential to durably mitigate losses. On a permanent basis, social safety nets are a key tool to provide support—irrespective of where people seek to activate them.

A package of domestic and EU-level reforms can unlock the much-needed benefits Europe should be reaping from its production hubs, and through well-designed policies all regions can share in the gains.

Box 2.1. Sizing up the Scope for Reducing Intra-European Union Trade Barriers[1]

Decades of integration have led to declines in the costs of trading between EU countries (IMF 2024; Adilbish and others 2025). Further integration is feasible, but measuring the full scope of untapped potential is difficult. This Box aims to size up this scope by comparing estimates of intra-EU with the benchmark provided by intra-US trade in a unified framework. Specifically, the gravity approach to estimate barriers to intra-EU trade in Adilbish and others (2025) is extended to include the states of the US as individual economies. The unified approach allows for gravity determinants of trade (for example, distance) to be estimated consistently across all possible bilateral pairs—be them countries or the states of the US. The exercise combines data from the Organisation for Economic Co-operation and Development's ICIO database, the US Census Commodity Flows Survey, and US Census foreign trade data by state. The results are based on data for 2007, 2012, 2017, and 2022, corresponding to Commodity Flows Survey vintages. Given the absence of intra-US services data, the analysis is restricted to goods sectors.

A panel specification with economy-pair fixed effects allows to identify changes in trade barriers relative to the first year in the sample, while controlling for the time-varying effects of bilateral determinants of trade. Results on aggregate manufacturing suggest that trade barriers have remained roughly at the same level since 2007 across most economies, including those within the EU. The exception is the estimated barriers between the US and China, which are estimated to have increased by about 15 percent (Figure 2.1.1).

As noted in Adilbish and others (2025), estimating the *level* of trade costs requires a specification where the country-pair fixed effects are replaced with time-invariant bilateral determinants of trade. The drawback of this approach is that it may ascribe to trade costs unmeasured drivers of trade that have little to do with actionable trade barriers, such as time-invariant preferences for goods produced domestically over goods produced abroad.
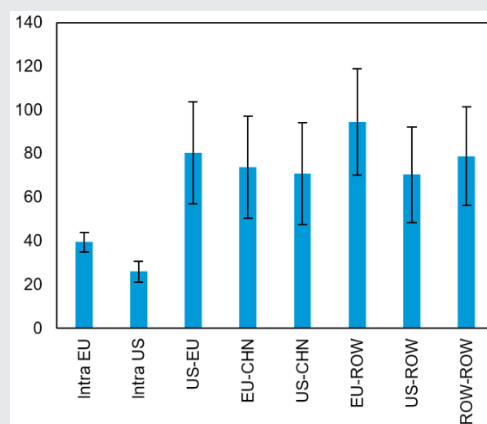
Figure 2.1.1. Estimates of Changes in Ad-Valorem Equivalents of Trade Costs
(Percent, 2022 relative to 2007)
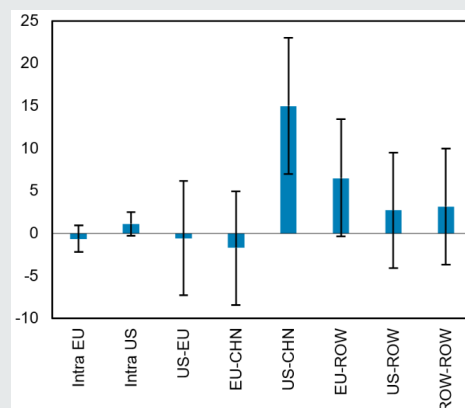
Sources: OECD, US Census; and IMF staff calculations.
Notes: Estimates based on gravity regressions with aggregate manufacturing and mining trade flows. A common trade elasticity value of 5 is used to compute ad-valorem equivalents. ROW excludes the EU and the US. Whiskers correspond to 90 percent confidence bands. Data labels in the figure use International Organization for Standardization (ISO) country codes. ROW = rest of the world.

Figure 2.1.2. Estimates of Ad-Valorem Equivalents of Trade Costs
(Percent, 2022)

Sources: OECD, US Census; and IMF staff calculations.
Notes: Estimates based on gravity regressions with aggregate manufacturing and mining trade flows (see footnote 10 in main text). A common trade elasticity value of 5 is used to compute ad-valorem equivalents. ROW excludes the EU and the US. Whiskers correspond to 90 percent confidence bands. Data labels in the figure use International Organization for Standardization (ISO) country codes. ROW = rest of the world.

Box 2.1. (continued)

For this reason, the estimated levels of trade costs should be considered an upper bound. With those caveats in mind, the estimates point to ad-valorem costs for aggregate manufacturing goods of about 40 percent for trade between EU members (Figure 2.1.2).[2] This is significantly lower than the cost of trading between non-EU economies—a testament to successful EU integration. At the same time, the intra-US estimated costs of about 26 percent in 2022 (and hovering between 21 and 26 percent across vintages) point to further scope for intra-EU liberalization.

[1] The author of this box is Lorenzo Rotunno.

[2] See Adilbish and others (2025) for a discussion of how their sectoral estimates compare to those by Head and Mayer (2021). Airaudo and others (2025) and Bentsen, van Deurs, and Yuan Zhuang (2025) estimate ad-valorem equivalents of intra-EU barriers for manufacturing sectors of about 60 and 55 percent, respectively. Rotunno and Cerdeiro (forthcoming) compare estimates across a range of databases, with the qualitative findings in Head and Mayer (2021) confirmed when using ITPD data, and the qualitative findings in this Box similar to those obtained using the ERTS database from Santamaria and others (2024).

Box 2.2. Capital Misallocation in Europe: The Case of Venture Capital[1]

The EU's underdeveloped venture capital (VC) market is an important factor holding back productivity and innovation (Draghi 2024; IMF 2024). Indeed, less than a third of EU firms receive VC compared to their US counterparts, with a wider gap among younger firms. Even when EU firms do secure VC, they receive half the amount of US firms on average (Figure 2.2.1). In addition to a shallower domestic VC market—possibly because of less developed capital markets and more stringent regulations—cross-border VC mobility barriers play a critical role (Arnold, Claveres, and Frie 2024). This box focuses on cross-border VC flows in the EU and the extent to which intra-EU fragmentation impedes VC investments.

The more fragmented VC market in the EU relative to the US constrains funding availability for EU startups and hinders the efficient allocation of capital. Figure 2.2.2 shows that VC investments among EU countries are more home-biased than those among the states of the US. Sixty percent of investors are from the startup's home country in the EU, compared to about 30 percent from the home state in the US. By contrast, fewer than 20 percent of investors in EU startups are from other EU countries—well below the 50 percent of investors from other states in the US, underscoring lower regional integration in the EU.

Deepening the EU single market could boost intra-regional VC flows. A panel gravity model that strips out the effect of policy-invariant factors (for example, distance) is estimated (Huang, Vaziri, and Cerdeiro forthcoming). The common legal origin dummy indicating whether two EU countries descend from the same legal tradition (La Porta, Lopez-de-Silanes, and Shleifer 2008) can help proxy the effect of harmonizing corporate regimes on VC flows. In a fully homogenized 28th corporate regime, legal clarity about firm assets in case of failure—a common startup risk—would broaden investors' search for funding. Similarly, reducing bilateral withholding taxes to zero can provide an upper bound on the effect of proposals to simplify withholding tax procedures.

Figure 2.2.1. VC in EU versus US
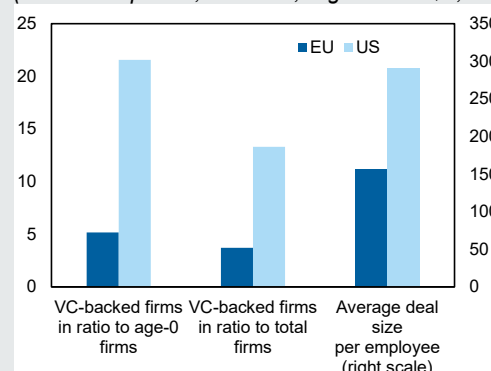*(Left scale: per 10,000 firms; Right scale: $1,000)*

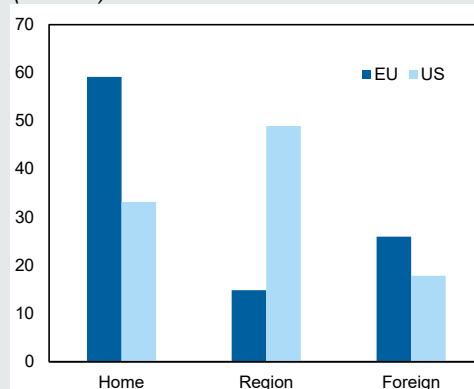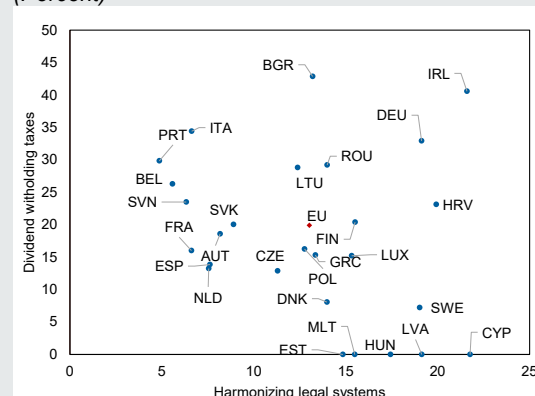**Figure 2.2.2. Composition of Investors**
(Percent)

Figure 2.2.3. Partial Equilibrium Effect of Common Legal Origin and Zero Withholding Taxes on VC Inflows
(Percent)

Sources: Dynemp, BDS, PitchBook, CEPII; Pellegrino, Spolaore, and Wacziarg (2025); and IMF staff calculations.
Notes: The sample covers 2015–24, except for the number of VC-backed firms in Figure 2.2.1, which covers 2015–18. In Figure 2.2.2, "Region" refers to other EU countries or other states of the US, respectively. In Figure 2.2.3, values for HUN, CYP, EST, LVA, and MLT are 0 as they have zero dividend withholding taxes in the dataset. Data labels in the figure use International Organization for Standardization (ISO) country codes. VC = venture capital.

Based on these proxies, and assuming a fully elastic supply of VC, intra-EU VC flows could increase by 13 (through harmonizing legal regimes) and 20 percent (through withholding tax modifications); Figure 2.2.3. Effects at the country level depend on the extent to which existing inflows come from countries with a different legal origin, and the level of withholding taxes. Under some assumptions (see Online Appendix), the combined effect is equivalent to around a 6 percent increase in the number of VC deals in the EU per year.

[1] The authors of this box are Yueling Huang and Maryam Vaziri. The Online Appendix provides additional technical details.

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