

Structural Weaknesses in the Economy of Cyprus: How Do We Score Relative to the EU15? †

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Abstract

Structural reforms for promoting economic growth and improving labour market conditions are some of the main targets of the Lisbon strategy. This paper examines how Cyprus compares with the EU on a number of structural indicators which are related to the Lisbon strategy.

The results for Cyprus are divided into three parts. The first part investigates the sources of GDP per capita and GDP growth using a growth accounting exercise. The second part analyses performance in 20 policy areas related to: (i) Labour market, (ii) Product and capital market regulations, (iii) Innovation and knowledge and (iv) Macroeconomy. Finally, the third part determines priorities among policy areas, relating underperformance in the first two parts based on the literature. The study aims to evaluate the results for Cyprus, providing policy recommendations when possible.

Keywords: Cyprus economy, country evaluation, structural reforms, Lisbon assessment framework.

1. Introduction

Structural reforms for promoting economic growth and improving labour market conditions are some of the main targets of the Lisbon strategy. This

† This paper is a result of a project sponsored by the Planning Bureau and funded by the Research Promotion Foundation (RPF) through the Economics Research Center (ERC). It aims to reach a better appreciation of the LAF methodology and, following a critical assessment, to propose improvements to this approach. Its application to Cyprus is scrutinised and several suggestions are offered and quantified.

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paper examines how Cyprus compares with the EU on a number of structural indicators which are related to the Lisbon strategy.¹

Recent developments have shown the importance, particularly for members of the eurozone, of following common economic policies and of being on convergent economic paths. Given this, it becomes important to monitor economic developments in MSs and to raise alarms when performance in certain critical indicators diverges wildly from the EU mean. When these alarms identify significant problems, it behooves MSs to take corrective actions. LAF draws on extant economic literature to connect problematic outcomes in indicators with underlying economic policies, thus pointing to measures that may be taken to improve outcomes. This comparative analysis is carried out for each MS, noting strengths and weaknesses as appropriate.

The results for Cyprus are discussed in three sections.² The first part, namely the assessment of GDP components (Section 2), investigates the sources of GDP per capita and GDP growth. The assessment of GDP components is based on a growth accounting exercise, which includes twelve indicators related to demographics, labour market and labour productivity components. The second part describes performance in 20 policy areas which are discussed in Section 3. This analysis is based on 282 indicators in policy areas related to: (i) Labour market, (ii) Product and capital market regulations, (iii) Innovation and knowledge and (iv) Macroeconomy. Finally, the third part relates underperformance in the first two parts based on the literature as a tool to determine policy priorities (Section 4). The study aims to discuss and evaluate the results for Cyprus, providing policy recommendations when possible.

¹ This analysis is based on the EU's LIME Assessment Framework (LAF). The LAF is a tool developed by the Lisbon Methodology (LIME) Working Group of the Economic Policy Committee (EPC), in order to evaluate the economic progress of all Member States (MSs) and their structural reforms, based on the Lisbon Strategy targets and guidelines.

² The data and the calculations for all indicators come from the LAF database or "Maquette", which is an automated Excel based application. The "Maquette" is updated every 6 months for all MSs. The results for Cyprus presented in the following subsections refer to December 2009, which is the most updated version currently in hand. It is also important to note that all score results presented in this paper are calculated relative to the average of the EU15. More specifically, the formula used to calculate the score for each indicator relative to the EU15 average is $[(\text{Indicator value} - \text{EU15 average}) / \text{EU15 standard deviation}] \times 10$.

2. The assessment of GDP components

The section examines the sources of GDP per capita and GDP growth, for Cyprus.³ The results for Cyprus are presented in Section 2.1 and commented in more detail in Section 2.2 below.

2.1 Presenting the results

As shown in Table 1, GDP per capita is decomposed into 12 components; namely fertility, share of foreign population, share of working age population, youth participation, male participation 25-54, female participation 25-54, Older worker participation, employment rate, average hours worked, capital intensity, total factor productivity (TFP) and initial education of labour.

The first column in Table 1 (Column I- GDP decomposition scores -level) shows the score of each GDP per capita component, relative to a benchmark (in this case the EU15 average). The score implies a relative performance for each country and in our case it is calculated based on data for 2008⁴. A positive score implies that Cyprus performs above the EU15 average, while a negative score implies that Cyprus underperforms compared to the EU15 average. For outliers, a score of 30 is assigned to countries performing far above the EU15 average (more than 3 standard deviations), while a score of -30 is assigned to low-performing countries (more than 3 standard deviations below the EU15 average). In general, the assessment is initially derived using the score in level terms. If this score is less than or equal to -4, then overall performance is evaluated as negative for a country. Other factors are taken into account before the final evaluation such as the growth performance and country specific reasons.

³ The analysis is based on a detailed growth accounting developed by the LIME Working Group. The description of the growth accounting methodology is out of the scope of this paper. More details on the LAF growth accounting exercise can be found in Christofides and Michael (2009b), or the original paper written by Gilles Mourre (2009).

⁴ Each component is standardized using the formula:

$$[(\text{Country value} - \text{EU15 average}) / \text{EU15 standard deviation}] \times 10$$

TABLE 1

Assessment of GDP components for Cyprus relative to the EU15 average

	GDP decomposition scores		Contribution to annual growth
	Level	Growth	
Demographic components	19	30	2,4
Fertility / Native Population	-4	19	0,5
Share of foreign population / Net Migration	30	18	1,1
Share of Working age Population	30	30	0,7
Labour market components	20	-5	0,0
Youth Participation	-6	0	0,0
25-54 Male Participation	9	-8	-0,2
25-54 Female Participation	2	8	0,4
55-64 Participation	7	-14	0,1
Unemployment Rate	8	5	0,2
Average Hours Worked	16	-7	-0,4
Labour productivity components	-23	1	1,2
Capital Deepening	-30	15	0,8
Total Factor Productivity	-20	-7	-0,1
Initial education of labour (Labour quality)	10	18	0,5
GDP per capita (level) / GDP (growth)	-13	22	3,6

Source: LAF Country Results- Cyprus – December 2009.

Notes: ¹ This Table is part of Table 1 in LAF with title “Relative performance of GDP components vis-à-vis the EU15 both in level and growth (scores)”.

² GDP decomposition scores indicate performance relative to the EU15 average. A score below -4 implies underperformance for Cyprus relative to the EU15. This is indicated in the shaded cells.

³ Level scores correspond to data for 2008, while Growth scores refer to the change over the years 2000-2008.

The second column (Column I- GDP decomposition scores -growth), shows the score on the growth of each GDP growth component, relative to a benchmark. GDP growth is decomposed into 12 components as well (Native population growth, net migration, share of working age population growth, youth participation growth, male participation growth 25-54, female participation growth 25-54, older worker participation growth, employment rate growth, average hours worked growth, capital deepening, TFP growth and initial education of labour growth). Again, all values indicated show a relative performance for Cyprus as described above.

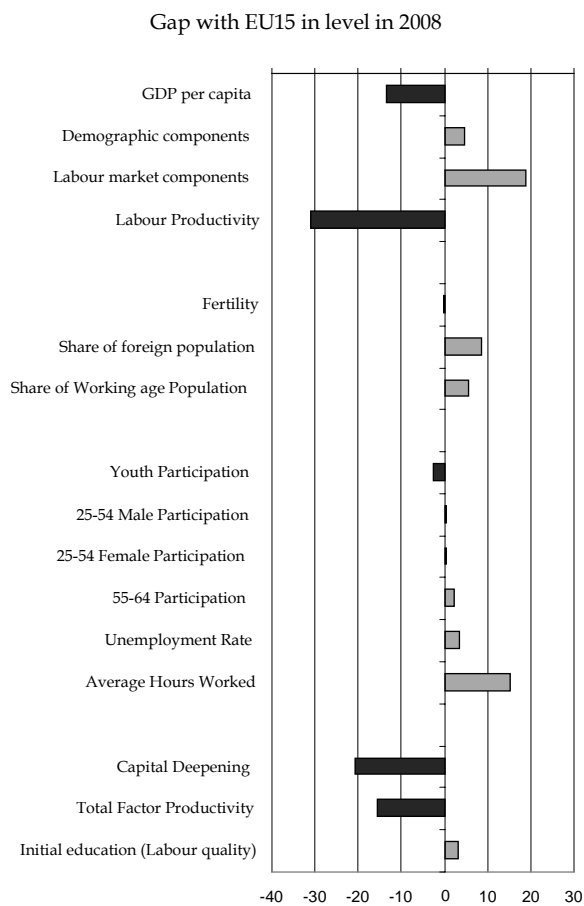
The third column, named as the absolute contribution of each component to GDP growth, gives the growth of each of the 12 components (i.e. the change between the years 2001-2008). Note that the absolute contributions of all components should sum up to 3,6, which is the value for per capita GDP growth for Cyprus (see the last cell of the third column).

For an easier view, the first three columns are presented in diagrams as well (Figure 1), where black indicates a negative value and grey a positive value. Figure 1 presents:

- The “GAP with EU15 in level in 2008” (GDP decomposition score on level),
- “Absolute growth decomposition 2001-2008” (Absolute contribution to annual growth) and
- “Growth differences vis-a-vis the EU15 for 2001-2008” (GDP decomposition score on growth).

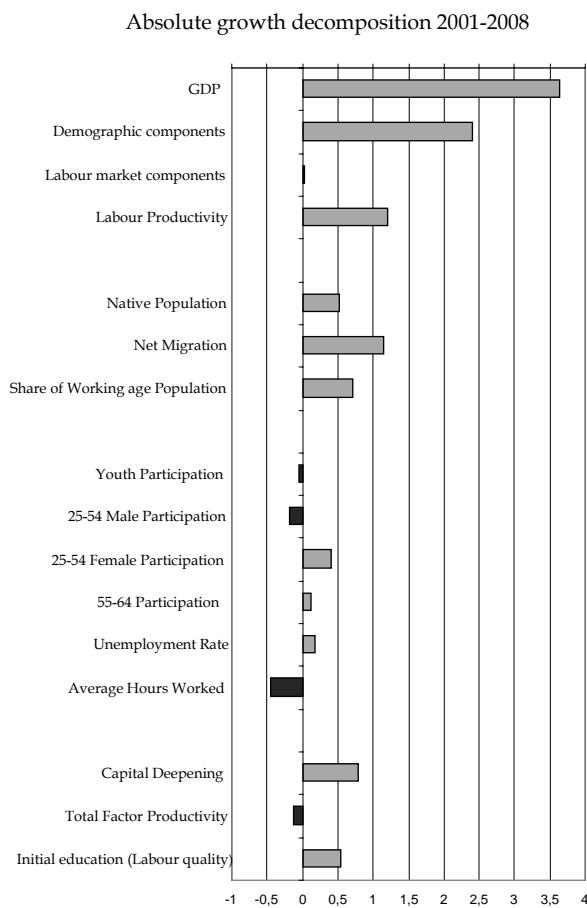
FIGURE 1

The assessment of GDP components in figures



Source: LAF Country Results- Cyprus, Figure 1: "An overview of income and growth differentials and sources" - December 2009.

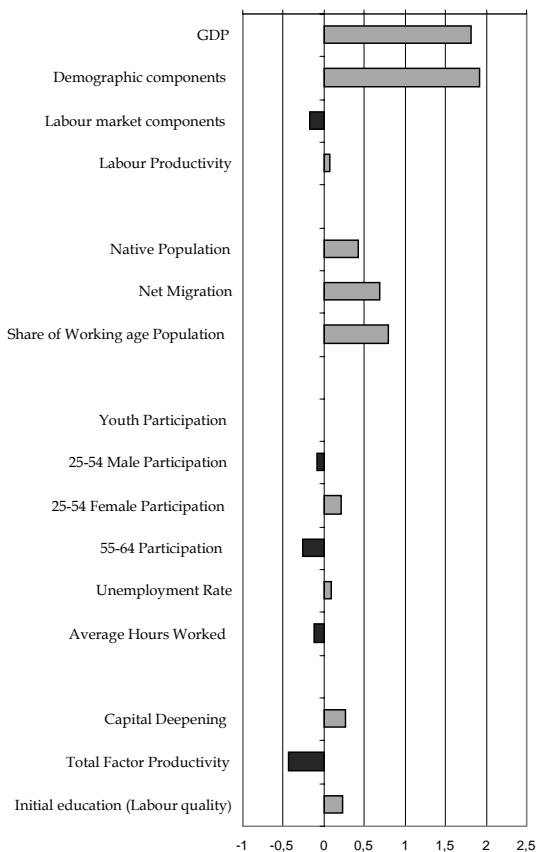
FIGURE 1 (continued)



Source: LAF Country Results- Cyprus, Figure 1: "An overview of income and growth differentials and sources" - December 2009.

FIGURE 1 (continued)

Growth differences vis-à-vis the EU15 2001-2008



Source: LAF Country Results- Cyprus, Figure 1: "An overview of income and growth differentials and sources" - December 2009.

2.2 Comments and discussion

GDP per capita for Cyprus is below the EU15 average, which gives Cyprus a poor relative score of -13 (for 2008). On the other hand GDP growth over the years 2000-2008 is 3,6%, which is much higher than the EU15 average. Consequently, the relative score on growth is 22, which is evaluated as good compared to the EU15. Of course, these numbers have dropped significantly recently for all countries due to the financial crisis. Based on Eurostat, GDP growth for Cyprus in 2009 was -1,7%, which still compares favorably to the EU15 average.

According to the decomposition for GDP per capita (score in levels), Cyprus is relatively weak in the components of youth participation, capital deepening and TFP. Youth participation is relatively lower in Cyprus than the EU15 countries due to a higher percentage of youth in tertiary education. Low performance in capital deepening on the other hand is explained by the structure and size of the economy. Cyprus has a small economy, based on services, and the majority of firms are very small. The nature of the economy also explains to some extent the low TFP performance.

Regarding the absolute contribution of each component to GDP growth (column 3, Table 1), three components are found to contribute negatively to growth. 25-54 male participation, average hours worked and TFP.⁵ In terms of the relative growth score compared to the EU15 countries (column 2, Table 1), one more component is underperforming, namely the participation of older workers.

In contrast, Cyprus is among the best performers in terms of demographic components. The fertility rate is evaluated with a neutral; an extremely good performance though in the share of working age population in combination with a continual increase in foreign immigrant workers makes the demographic component for Cyprus well above the EU15 average. It is worth noting that, net migration has a 1,1% absolute contribution to growth (indicated in the third column of Table 1) which is 30% of total GDP growth.⁶

3. The assessment of performance in various policy areas

The growth analysis exercise is complemented by an assessment of key policy areas. The list includes (i) 10 policy areas that have to do with the labour market, (ii) 6 policy areas related to product market and

⁵ Hours worked is a problematic variable. There are large reporting and measurement errors and data are continuously revised. Hence, this indicator should not be given much attention. Moreover, from a welfare point of view more hours of work would induce a welfare reduction, since more hours are associated with lower levels of leisure. Welfare maximization is an important missing dimension from this framework, which strictly focuses on income per capita and its relation to production, rather than utility (welfare) maximization.

⁶ For more details on the data and the methodology for this part please see Christofides and Michael (2009b).

regulations, (iii) 3 policy areas on innovation and knowledge and (iv) 1 policy area on the macro economy.

Each policy area contains multiple indicators, which are used to calculate an aggregate weighted score for each policy area. Some indicators carry zero weight because they are pleonastic, inaccurate or of more marginal significance⁷. Table 2 presents only the aggregate score for each policy, both in terms of levels and changes.⁸ As in the previous section, the score indicates a relative performance vis-à-vis the EU15 average as a benchmark. In Table 2 the score in levels refers to the relative performance of the country in the last year available (in this case in 2008 or before if not available). The score in changes refers to the relative progress of the country between the years 1999-2008 (or less if not available). A priori, a policy area is considered underperforming if the score is equal to or less than -4, which is indicated with the shaded cells in Table 2.⁹

TABLE 2
Assessment of performance in policy areas for Cyprus

Policy areas -- Aggregate scores for CY	Indicator-based assessment (LAF)	
	Level	Change
Labour market		
Active labour market policies	1	-2
Making work-pay: interplay of tax and benefit system	8	2
Labour taxation to stimulate labour demand	28	19
Job protection and labour market segmentation/dualisation	10	3
Policies increasing working time	10	-8
Specific labour supply measures for women	-2	5

(Table 2 continues on next page)

⁷ Indicators with no weight are called “wider list” indicators, while indicators with positive weight are called “narrow list” indicators.

⁸ For example, the first policy area “Active labour market policies” contains 20 indicators, from which only 6 are used in the calculations (narrow list indicators). Hence, the aggregate score for this policy area, presented in Table 2, is the weighted average of the score of these 6 indicators only. Weights given to each indicator are not necessarily equal.

⁹ In this framework rankings can be revised due to country specific information, statistical issues, specific indicator issues, recent reforms and benchmark issue.

TABLE 2 (continued)

Specific labour supply measures for older-workers	1	-3
Wage bargaining and wage-setting policies	14	13
<i>Wage moderation</i>	14	9
<i>Wage differentiation</i>	16	22
Immigration and integration policies	10	-23
Labour market mismatch and labour mobility	-7	-10
Product and capital market regulations		
Competition policy framework	16	13
Sector specific regulation (telecom, energy)	-15	-2
<i>Sub-aggregate I: telecommunications</i>	-13	1
<i>Sub-aggregate II: energy</i>	-17	-17
<i>Sub-aggregate III: others</i>		
Business environment - Regulatory barriers to entrepreneurship	-4	1
Business Dynamics - Start-up conditions	0	5
Financial markets and access to finance	-1	-2
<i>Sub-aggregate I: competition-efficiency</i>	4	-2
<i>Sub-aggregate II: financial market integration</i>	2	
<i>Sub-aggregate III: Competition on financial retail markets</i>	-7	
Market integration - Openness to trade and investment	12	6
Innovation and knowledge		
R&D and Innovation	-21	4
ICT	-13	3
Education and life-long learning	2	8
<i>Sub-aggregate I: education</i>	6	7
<i>Sub-aggregate II: life-long-learning</i>	-5	13
Macroeconomy		
Orientation and sustainability of public finances	5	3
<i>Sub-aggregate I: consolidation of pf</i>	3	2
<i>Sub-aggregate II: sustainability</i>	8	5

Source: LAF Country Results- Cyprus - December 2009.

3.1 Comments and Discussion

3.1.1 Labour market

In most of the labour market policy areas, Cyprus performs above the EU15 average though in some areas there is an apparent deterioration over time, which is seen by the poorer performance in terms of “changes”. Each policy area is individually analysed in detail in the following paragraphs.

i. Active labour market policies

In this area Cyprus is ranked very close to the EU average, both in levels and changes (level 1, change -2).¹⁰ In terms of participation in Active Labour Market Policies (ALMPs), Cyprus underperforms compared to the EU15. More specifically, participation in ALMPs was 11,6% of the people wanting to work in 2007, compared to 41% in the EU15.¹¹ Expenditures on ALMPs have been relatively low because, until recently, Cyprus had no more than frictional unemployment. Cyprus is well above the EU15 average in terms of the long-term unemployment rate (0,5% of total active population in 2008) and the youth unemployment ratio (3,8% of youth population in 2008), which are among the main indicators. In addition, the employment rate of the low-skilled was 50,9% of the working age population, which is around the EU15 average. Unemployment has been increasing during the last two years, but it also has been increasing in the EU15; the relative performance of the last two, critical, years, is not yet reflected in the analysis.

ii. Making work-pay: interplay of tax and benefit system

Cyprus performs fairly well in this policy area, while the score in terms of changes is neutral (level 8, changes 2).¹² The income tax system in Cyprus

¹⁰ A policy area is evaluated as neutral in LAF if the aggregate score belongs to the interval (-4, 4).

¹¹ Active labour market policies (ALMPs) are government programs that intervene in the labour market to help the unemployed find work or encourage people remain in employment. There are three main categories of ALMP: (i) Public employment services, such as job centers and labour exchanges, help the unemployed improve their job search effort by disseminating information on vacancies, (ii) Training schemes, such as classes and apprenticeships, help the unemployed improve their vocational skills and hence increase their employability and (iii) Employment subsidies, either in the public or private sector, directly create jobs for the unemployed.

¹² A policy area is evaluated as fairly good in LAF if the aggregate score belongs to the interval (4, 10).

has a relatively high personal exception level that gives incentives for increasing participation. Additionally, the short duration of unemployment benefits in Cyprus discourages long-run unemployment.

The social welfare system, however, is more generous. This is especially true in the case of one-earner couples with children, since the amount of the total family benefit would compare favourably to the total family income obtained once the second earner enters the labour force. In general, increasing the amount of the public assistance benefit should be done with more caution, taking into account other factors, such as minimum wages in the market. In order to encourage the inactive to enter the labour market, in-work benefits should replace the public assistance benefit, especially in cases where the person has no physical disabilities, or health problems. Moreover, when a person moves from inactivity to work, the gradual reduction of the public assistance benefit should be perhaps extended to two years instead of one, providing a further incentive to leave inactivity.¹³ An additional modification to the system, such that individuals who quit a job can only be entitled to reduced benefits from public assistance, would encourage individuals to hang on to existing jobs (except perhaps where overwhelmingly important reasons can be provided). Other support measures could be provided to the inactive who enter the labour market, such as psychological support, training, free childcare facilities etc.

iii. Labour taxation to stimulate labour demand

Cyprus ranks high in this area compared to the EU15 average, both in levels and changes (level 28, changes 19). The tax wedge on labour cost for Cyprus is the lowest in the EU for all categories of employees.¹⁴ In the case of a single low wage-earner the tax wedge is 11,9% of total labour cost, compared to 40,8% which is the EU15 average. For single average wage-earners, this number becomes 13,9% for Cyprus compared to 44,1% for the EU15. The total tax wedge for a married couple with two children is 11,9% for Cyprus, while the EU15 average is 40,2%. Finally, the implicit tax rate on employed labour is the second lowest in the EU after Malta.

¹³ There has been a 2006 amendment of the Public Assistance Law aiming to facilitate public assistance recipients to keep their job, while benefits are gradually reduced, up until one year after the job is acquired.

¹⁴ The tax wedge on labour cost is defined as income tax plus employee and employer social contributions including payroll taxes less cash benefits divided by the labour costs.

iv. Job protection and labour market segmentation/dualisation

These indicators suggest a relatively good performance for Cyprus compared to the EU15.¹⁵ This good performance for Cyprus reflects the low levels of unemployment for 2008 and it is conditioned by the fact that Cyprus has low incidence of involuntary temporary and part-time employment when measured (as in LAF) relative to total employment. In particular, 2,1% of total employment in 2008 is involuntary part-time employment, compared to 5% in the EU15 countries. However, this “good” performance merely reflects the unpopularity of these forms of employment. A better indicator would have involved a comparison of the involuntary state of employment relative to the particular type of employment (rather than total employment), e.g. “Involuntary part-time employment as a percentage of total part-time employment”.

v. Policies increasing working time

Increasing working time is considered another way to enhance labour supply, although from a welfare perspective, higher hours worked indicate a cost in terms of leisure and perhaps imply a smaller number of people employed. Hence, the interpretation of indicators in this policy area should be made with caution. It is also a very poorly covered area, since only three indicators are included in the analysis (Annual working time and Poverty trap indicators for (i) singles and (ii) one-earner couples with two children). Based on, good performance in levels for 2008 in the first two of the above three indicators, Cyprus does well (a rating of 10) in levels. However, declines in working hours contributed to an adverse rating in changes (a rating of -8)¹⁶.

All indicators in this policy area, are based on full-time equivalents and do not take into account whether flexible forms of employment exist. Flexible forms of employment may not only increase working time for those already employed, but may also help the inactive to enter the labour market. Indicators related to flexibility in working hours should be added to this policy area, though such a modification would reduce the overall scores for Cyprus in this area.

¹⁵ A policy area is evaluated as good in LAF if the aggregate score is above 10.

¹⁶ However, data on working hours are continuously updated and are more likely to suffer from reporting and measurement errors.

vi. Specific labour supply measures for women

The analysis which is based on a large number of indicators shows that Cyprus is close to EU average, though in terms of growth rate it ranks slightly above average (level -2, changes 5). Female participation in Cyprus has increased over time mainly as a result of an increase in female education. The female employment rate was 62,9% in 2008, which is above the Lisbon employment target by 2010 (60%) and above the EU15 average. However, the gender pay gap is still a problem that needs to be addressed. The gender pay-gap in unadjusted form was 23,1% in 2007 compared to a 18,1% EU15 average. It would be more useful to measure the gender pay gap taking into account educational attainment and other productive characteristics, in order to determine whether the conditional gap is larger or smaller than the unconditional gap that is normally and erroneously used.

More accurate estimates on the gender gap are provided in a recent econometric study by Christofides L. et al. (2009d) who examine the gender wage gap in Cyprus and the EU using data up to 2007. The results show that the wage gap is estimated to be around 0,5 (log-wage points) of which 0,22 is the explained part (explained by differences in characteristics such as education) and 0,27 is the unexplained (perhaps due to gender discrimination). Based on their estimates, Cyprus ranks last out of 24 EU countries in the total wage gap. Moreover, Cyprus is found to be 24th in terms of wage discrimination against women. The authors estimate that the gender pay gap in Cyprus is mainly attributed to the “sticky floor” effect in the sense that most of the professions selected by women have no opportunities for professional development (e.g. secretaries). This can also be supported by higher “gender segregation on occupations” in Cyprus compared to the EU15; this is one of the wider list indicators for this policy area.

In terms of childcare, Cyprus underperforms the EU15, especially in the cases of (i) children aged 0-2 years cared for less than 30 hours a week and (ii) children 6-12 years cared for 30 hours per week and more. This might be related to part-time employment opportunities. Since full-time employment is around 40 hours per week, women that need less than 30 hours are usually women that work part-time which is not very popular in Cyprus. It could also be the case that childcare by family members (e.g. grandparents) is more common in Cyprus, especially for children aged 0-2 years.

More childcare facilities for mothers should be introduced in order to help women reconcile work and family. For example, an increase in working hours for public pre-primary schools, or the application of day-long school

for all primary schools, will reduce the opportunity cost for women and increase female participation in the labour market. In addition, flexible hours of work will help women reconcile family and career. This will be more desirable to women compared to part-time employment, since the offered wage is not necessarily low, as is the case for most part-time job opportunities. Flexible hours of work will also help in reducing the gender pay gap, by giving the opportunity to women to get more responsible and well-paid jobs.

vii. Specific labour supply measures for older-workers

The employment rate for older workers is relatively high in Cyprus (54,8% compared to 47,4% in the EU15) and the average exit age from the labour force is also higher than the EU15 average (63,5 years for CY, 61,5 for the EU15). Older women seem to have a higher inactivity rate than men but this is due to lower education levels and patriarchic beliefs and hence this is expected to improve over-time. Aggregate scores for this policy area are neutral both in levels and changes. Cyprus needs to continue life-long learning and continuous training for older workers to help them remain at work or work more efficiently. Health issues and policies might also be relevant to this policy area; however, no health-related indicators are currently included in this policy area.

viii. Wage bargaining and wage-setting policies

Although very important in terms of policy analysis, this area is controversial mainly because of the poor choice of indicators and the ambiguous interpretation that could be given to the two indicators related to labour costs, which form the “wage moderation” sub-category.¹⁷ For example, high wages even relative to the EU15 average can be seen favorably provided they are justified by productivity developments. High real wage growth relative to productivity should count as a negative development. Hence these cannot be seen in isolation. With these caveats in mind, Cyprus ranks relatively high, largely because it does well in terms of the low-skilled unemployment rate gap relative to high-skilled unemployment rate and in terms of real unit labour costs growth. The performance in the relative skill unemployment rate reflects a tight labour

¹⁷ The aggregate score for this policy area is calculated using only four indicators; two for each sub-category. In addition, one of the two indicators in the sub-category of Wage Differentiation, namely the Dispersion of Regional Unemployment Rates is not available for Cyprus due to the small size of the country. Hence, the score for Wage Differentiation is just the score for the Low-skilled unemployment rate gap relative to the high-skilled.

market for unskilled labour and the relative abundance of highly skilled tertiary education graduates; indeed, a relatively high unemployment rate for skilled labour does not reflect structural strengths. Real unit labour cost growth is -2% compared to 0,9% in the EU15 (a relative score of 22 for Cyprus). Nominal unit labour cost growth is 2,7%, compared to 3,3% in the EU15 (a relative score equal to 5).

ix. Immigration and integration policies

Immigration and integration policies are very important for Cyprus. The introduction of foreign workers to Cyprus is one of the most important developments in the Cypriot labour market over the last two decades. In 2008, foreign workers in Cyprus amounted to 96.324, which was approximately 25,5% of total employment. Based on a recent study by Gregoriou et al. (2009), foreign workers come to Cyprus mainly due to high income levels and income gaps and other non-economic factors such as a common spoken language between the sending countries and Cyprus, the distance between them and network effects generated from the stock of migrants in Cyprus.

Due to its importance, the impact of foreign workers in Cyprus has been studied intensively. Christofides L.N. et al. (2005) estimated that the contribution of foreign workers' employment to the growth rate of total gross value added in 2004 compared to 1995 was 54,2% which was the highest contribution among all factors of production. Christofides L.N. et al. (2006) showed that workers with no skills and less than secondary education have been affected negatively from the increase of foreign workers, skilled-workers with secondary education have benefited marginally from the increase of foreign workers, while skilled-workers with college or university education have benefited a lot from the increase in the number of foreign workers. In addition, Christofides L.N. et al. (2009c) found that the presence of foreign workers in Cyprus has not affected total unemployment or total labour force participation. However, the presence of foreign workers negatively affected some specific age and education groups. For instance, the increase in foreign workers has decreased the labour force participation of domestic low-skilled people aged 20-39 (with primary education). As explained, people in this group have the same skills as foreign workers and thus are competing against them.

The introduction of foreign workers in Cyprus has created some social concerns and increased the availability of low-cost unskilled labour, discouraging capital deepening. Additionally, an enormous number of foreign workers (perhaps 50.000) are estimated to work illegally in the country. Cyprus is vulnerable because of illegal immigration channeled

through the occupied north. Better border control and immigration policies are necessary to prevent illegal stay of foreign workers and other undesirable social effects.

Even though the number of available indicators for the analysis is limited, the results suggest that Cyprus scores well in terms of levels but poorly in growth rates.¹⁸

x. Labour market mismatch and labour mobility

Although labour mobility may be less relevant for Cyprus because of its small size, these indicators are generally considered important in assessing the well-functioning of the labour market.¹⁹ Labour market mismatch, however, is more relevant. Overall, and based on a limited number of indicators, Cyprus performs below average in this area (level -7, changes -10)²⁰. This is mainly attributed to the low relative performance in vacancies per unemployed, which is one of the two indicators used in the calculations of the aggregate score for Cyprus.

3.1.2 Product and capital market regulations

Overall, the results for the area of product and capital market regulations suggest that Cyprus can improve significantly by pursuing structural reforms in these areas. The assessment goes in to some detail in the areas of sector specific regulation (telecom, energy), the business environment, business dynamics, financial markets and access to finance.

i. Competition policy framework

In the area of competition policy Cyprus ranks favorably compared with the EU15 average (see Table 2). This policy area includes five indicators, with a bigger weight attached to comparative price levels. Other equally important indicators are (i) state aid as a percentage of GDP, (ii) ad-hoc

¹⁸ The choice of indicators and the absence of data for Cyprus in most of the indicators leave the total evaluation of the policy area captured by two indicators only; the Employment Rate Gap indicators (between non-EU and EU nationals and between EU-born and non-EU born).

¹⁹ Cyprus is considered as one region based on NUTS. The NUTS levels are defined in terms of minimum and maximum population sizes. For example, NUTS3 corresponds to a population range between 150 000 - 800 000 people.

²⁰ This policy area is also poorly covered and in combination with data unavailability, aggregate scores for Cyprus are based on only two indicators; (i) Vacancies per unemployed and (ii) Mismatch by education.

state aid, (iii) public procurement as a percentage of GDP and (iv) public procurement as percentage of total public procurement. Cyprus has obviously improved in the area, particularly after EU accession though more attention should be given to oligopolistic markets with homogeneous products like gas retailers, pharmacy stores etc.

ii. Sector specific regulation, telecom and energy

Cyprus has a poor performance in sector specific regulation such as telecommunications and energy, compared to the EU15 average. Cyprus is assessed below the EU15 average in both telecommunications and energy. In terms of changes over time, there has been a slight improvement in telecommunications, but not in the energy sector. This reflects the dominance of large incumbents in Cyprus' utilities industries.

In the energy sector, the Electricity Authority of Cyprus (EAC) is still the only domestic provider in the market, according to the data. Other companies such as Vassilikos Cement Works Public Company Ltd are also licensed to produce electricity; however, they use the amount generated for their own (industrial) purposes. Hence, the demand faced by EAC is inelastic and any price increases are borne by the consumers. Cyprus needs to promote structural reforms in this sector to increase competition in the market and promote the use of renewable energy sources of production. The small size of the market is a problem, but there is room for improvement.

The Cyprus Telecommunications Authority (CYTA), which is the first telecommunication provider in the island, is no longer the only provider (since 2003). However, CYTA had been charging the lowest price in Europe for fixed telecommunication, local, calls. After 2003, prices gradually increased (though prices are still much lower than the EU15 average). Hence, Cyprus is evaluated as the worst in terms of growth in fixed telecommunication prices of local calls. On the other hand, international fixed telecommunication prices have been decreasing, after the liberalisation of the market. Due to the small size of the island and the already well-developed telecommunication infrastructure, the Cypriot telecom market cannot absorb a big number of new entrants.²¹ Hence, market shares of the leading telecommunication operator are not expected

²¹ It is worth noting that CYTA is a member of the European Foundation for Quality Management and in 2007, CYTA was "Recognized for excellence" with the highest ranking of 5 stars.

to decrease much more. What matters is the provision of good services at low prices, which is so far achieved for Cyprus.

More indicators on mark-ups, innovating behavior of the firms in the sector, and measures on effective control of the regulating bodies are perhaps necessary to complete the picture for this policy area.

iii. Business environment- Regulatory barriers to entrepreneurship

The business environment in Cyprus is characterised by a large number of small and medium sized enterprises (SME's) with a very small number of employees (99,9% of the companies have less than 10 employees). Regarding the number of procedures and the time necessary to register property or obtain a license, Cyprus performs around the EU15 average according the data. These need to be improved though, since Cyprus is a service-oriented economy and bureaucracy might prevent domestic and foreign investment and hence delay growth. We spot great inefficiency of the judicial system in resolving commercial disputes compared to the EU15 countries.

iv. Business dynamics- Start-up conditions

On aggregate, Cyprus is found to be close to the EU15 average in level terms and fairly good in terms of changes. Based on these indicators, on average, you need seven working days to start and formally operate a business in Cyprus, compared to eight days in the EU15 countries.²² Moreover, the cost of a new start-up is much lower in Cyprus (265 euro), than in the EU15 (750 euro). On the other hand Cyprus slightly underperforms in closing a business, both in terms of the time required and cost. The One-Stop Shop which started to operate in April 2007, offering a range of government services at one place, is expected to reduce the time necessary to complete these procedures.

v. Financial markets and access to finance

In the area of financial markets a newly added set of indicators is divided into three sub-categories, namely (i) efficiency of the domestic financial system, (ii) financial market integration and (iii) competition in financial retail markets. Overall, Cyprus is ranked just below the average with the more serious problems identified in the area of competition in financial retail markets.

²² These values refer to 2006, which is the only year that Cyprus has data for this indicator.

The financial sector in Cyprus is mostly comprised of the banking sector, which provides insurance and asset management services as well. According to the IMF, “there are 43 banks operating in Cyprus, of which eight have Cyprus as their home country; the rest are branches or subsidiaries of foreign banks. Non-bank financial institutions include pension funds, insurance companies, and investment companies”. In addition, as mentioned in the last LAF Case Study Report, “the size of the market cannot support venture capital firms because of their small size. In reality, the SMEs (that comprise the quasi-totality of Cyprus businesses) cover their financial needs by accessing the usual investment loan products from banks and financial institutions.”

The size of the financial market is relatively large compared to the EU15 average. In terms of the efficiency of the domestic financial system, the only indicator in which Cyprus underperforms is Stock market liquidity. The venture capital market, on the other hand, is non-existent in Cyprus and hence one of the main indicators is missing for Cyprus.

Regarding financial market integration, Cyprus performs well in foreign bank activity as already mentioned above. However, no foreign companies are listed in the Cyprus Stock Exchange, which lowers the score relative to the EU15 in terms of the share of foreign listed companies on equity exchanges.

Finally, in terms of competition in the financial retail market, Cyprus is technically evaluated as fairly poor. The banking sector is relatively more concentrated with the highest 5 banks holding 65% of the market. Nevertheless, foreign presence in the market (especially from Greek banks) is growing and significant. Moreover, most indicators are related to technical advances in the sector, which are not yet reflected in the data. Online bank services are now offered by all banks and the number of online banking users has increased over the last two years. The same holds for the number of cashless transactions, since nowadays most retailers accept credit cards as a method of payment, while this was not the case a couple of years ago. These changes are not yet reflected in the data and hence the score is expected to improve in the future.

vi. Market integration - openness to trade and investment

On aggregate, Cyprus scores better than the EU15 average (level 12, changes 6). In general, Cyprus is a highly open economy. Due to its small domestic market and the open nature of its economy, access to international markets is very important. Cyprus performs relatively well compared to the EU15 in terms of both cost and time needed for imports. Moreover, good performance is observed in the trade integration of goods

and services. More specifically, the average value of imports and exports of goods was 25% of GDP in 2008. The average value of imports and exports of services is 30% of GDP, which is among the highest in the EU.

The strong integration of the economy of Cyprus with the rest of the world is also reflected in its high Foreign Direct Investment (FDI) Intensity (15,6% GDP in 2008) which exceeds the EU15 Intensity (2,3% GDP). FDI has been liberalized, since the 1st of October 2004. According to additional information from the Cyprus Investment Promotion Agency (CIPA), in 2009, Cyprus attracted a total of 4.493 million euro in FDI compared to 3.112 million euro in 2008 and 1.725 million euro in 2007; hence, some clear improvement is observed over time. In 2008, the top three FDI sectors were financial intermediation (1.315,2 million euro), real estate and business activities (817,9 million euro) and trade and repairs (415,9 million euro).

3.1.3 Innovation and Knowledge

Two policy areas in this section are identified as underperforming compared to the EU15 average. A number of reasons could be behind this, including statistical inaccuracies and measurement issues, which affect mainly the scores for the areas R&D and innovation and Education and life-long learning.

i. R&D and Innovation

This is one of the underperforming areas for Cyprus. Performance in this policy area remains poor even after correcting mistakes in the data used²³. In terms of changes, there is a slight improvement.

For an economy like Cyprus, private R&D activities are limited. The Cypriot economy is based on services and 99% of private companies are smaller than 10 employees in size, so the creation of private R&D units is not possible. The government can only encourage the creation of private research units in very few fields with high-tech potential. The pharmaceutical industry, for example, seems to be growing and according to Cyprus external trade statistics for 2007, 20,6% of Cyprus exports are pharmaceutical products. Incentives to pharmaceutical industries for private R&D may increase the employment of scientists in the field,

²³ The score for this policy area should be -16 instead of -21 due to wrong data values used for the indicator Science and Technology Graduates. In particular, Cypriot graduates abroad, which is approximately two thirds of the total number of graduates are excluded from this indicator.

possibly increase the number of patents gained for Cyprus, and help the sector grow further since now it is mainly based on replicating existing medical products. However, this requires careful studies, organization and work to achieve the necessary infrastructure and the minimum standards to compete internationally.

R&D funded by the government is what Cyprus has to focus on. During the last few years, the government has been contributing to R&D expenditures by founding the Open University of Cyprus in 2006 and the Cyprus Technological University in 2007, which are the second and third public universities in Cyprus respectively. Moreover, the Engineering School at the University of Cyprus was created and it accepted its first students in 2007, while the new campus for the University of Cyprus is under construction. These are expected to have a positive effect on the score values in the future.

Investing in universities and research centers should be the main target of the government in the near future. This will increase employment opportunities for Cypriot scientists and prevent them from working abroad or find employment in other sectors irrelevant to their field. In other words, Cyprus needs to fully exploit its tertiary education graduates. This will possibly increase the number of patents gained for Cyprus, since many patents invented by Cypriots are now attributed to other countries or foreign companies.

Hence, as one would expect Cyprus scores relatively low compared to the EU15, though a number of policies which are in place are likely to improve performance in this area in the future.

ii. Information and Communication Technology (ICT)

Although data quality and availability is a problem in this area, the available information suggests that Cyprus underperforms compared to the EU15 countries, though one sees improvement over time.²⁴ Notice, that much recent activity in this sector is not yet reflected in the data.²⁵

²⁴ For Cyprus, coverage is reduced due to unavailable data for two of the five indicators used in the calculations.

²⁵ The University of Cyprus, for example, upgraded its online services with the online registration possibility, starting January 2009. The same holds for many government departments. Other private companies such as real estate and electronics stores now provide their services online and the government keeps increasing the online possibilities.

However, there remains a vast potential for higher utilization of the opportunities offered by ICT. The government should create more ICT units responsible for the creation and support of online services in all the basic public services. If most government services can be done online, people will save valuable time and avoid part of the bureaucratic procedures needed during work hours. Moreover, tourism and the real estate sectors can largely benefit from the use of online advertising and other facilities. Most people now book and pay for their flights, hotels and transportation services online, since it is much more convenient. Since tourism is an important sector for the Cypriot economy all companies should be able to provide online services if they want to remain in the market. The same holds for all real estate companies. The government could promote the use of online services offered by hotels and private companies through seminars and advising offices if necessary. Online sales and purchases offered by private stores are not popular mainly because of the very small size of the country. A more efficient operation of the postal services in Cyprus might help in increasing the benefits from online purchases.

iii. Education and life-long learning (LLL)

Cyprus scores around average or better than the average if one considers changes over time (level 2, changes 8). This neutral overall score in levels is the result of, on the one hand, negative performance in issues related to LLL and training and, on the other hand, a strong performance in educational attainment. In this area the actual data and therefore the results may underestimate the performance of Cyprus due to a number of data and other institutional factors (see Christofides and Michael (2010) for more details).

In the latest country report for Cyprus (June 2008), it was concluded that Cyprus is under-performing in this policy area, even though the score was neutral. The main reason given was that "... a weak performance in several dimensions (such as rate of early school leavers, life-long learning, participation in continuous training, investment by enterprises in training of adults, share of graduates over working age population) of the policy area explain the weak labour productivity performance in Cyprus... In addition, underperformance in dimensions not captured by the indicators used points to the challenges of increasing employment and training opportunities for young people as well as further enhancing the responsiveness of the education and training system to the labour market needs." This assessment was based on several indicators with problematic data.

Cyprus has an extremely good performance in education, evaluated as above the EU15 average. Therefore, the weak productivity performance cannot be explained by low qualified personnel, but possibly other factors, such as the inefficient usage of tertiary graduates in public sector services, lack of infrastructure and poor organization. The government needs to provide the means and infrastructure, in order to fully exploit its tertiary education graduates. Creating job opportunities for researchers and scientists will prevent tertiary graduates from working in jobs irrelevant to their field of study, or looking for a job abroad. In other words, what the government needs to do is to give the opportunity to all qualified Cypriots to apply their knowledge and contribute to economic growth. Failure to do so, results in pure waste of resources.

Regarding the education system there are still things that need to be done such as improving the vocational training system.

3.1.4 Macroeconomy

Large and persistent budget deficits generate considerable concern. It is widely believed that they reduce growth and could create undesirable debt dynamics, if they go on for too long or become too large. Hence, macroeconomic and fiscal measures are important and necessary to be included in a framework like LAF.

As indicated in Table 2, there is only one policy area included in the case study, under this section, namely Orientation of public finances²⁶. Based on this set of indicators the performance in this area is evaluated as fairly good on levels and neutral in terms of growth rates (a rating of 5 in levels and 3 in changes).²⁷ The sub-category score for the consolidation of public finances is evaluated as neutral, while the score for sustainability is fairly good²⁸.

Looking at the budget measures, Cyprus performs relatively well, though we observe an important deterioration in 2009, which is not reflected yet in this analysis. The gross debt ratio, which reflects the accumulation of past

²⁶ Under the macroeconomy section there is one more policy area, namely "Macroeconomic background information", which is not included in the LAF country tables. This is just complementary.

²⁷ This policy area is covered by six indicators, of which four are included in the first sub-category (Consolidation of public finances).

²⁸ Note, that the sub-aggregate growth score for Sustainability is based on only the score of indicator 9 (Sustainability S2 Long term).

debts, was 48% of GDP in 2008, while in 2009 this number increased to 56%. Despite this sharp worsening, Cyprus still performs above the EU15 average and below the target of 60% of GDP. Net lending as a percentage of GDP (or actual public balance) was 0,9% of GDP in 2008 and -6,1% in 2009. If we exclude interest payments, these numbers become 3,72% for 2008 and -3,6% in 2009 (Primary balance). As indicated by these numbers, there was a surplus for Cyprus in 2008, even when interest payments are included. In 2009, however, both indicators show a deficit in public balances. Taking into account the effects of the business cycle, the cyclically adjusted balance (CAB), was -0,2% in 2008 and - 5,8% for 2009. Cyprus shows an expansionary fiscal position for 2008 since the primary structural budget balance (CAB net of one-off items) has increased significantly in 2008 relative to 2007 (a change of -2,84 % of GDP). This continued to hold in 2009 as well, with a change of -5,4% of GDP.

In terms of sustainability, the adjustment to the structural budget balance that is required to reach the target debt/GDP ratio of 60% by 2060 (finite horizon budget constraint) is 4,6% of GDP, despite the fact that the current government debt is below 60%. This is because of the large adjustment needed to cover age-related expenditures by 2060. Alternatively, the adjustment required to fulfill the infinite horizon budget constraint is 8,79% of GDP for 2008. This can be broken down into the adjustment due to the initial budgetary position, which is 0,52% GDP and the long-term adjustment due to the increase in age-related expenditures, which is 8,28%. This long-term component is almost double the EU15 average and indicates that Cyprus needs to urgently address the increasing age-related expenditures issue. A structural reform on the social security and pension schemes is necessary.

The analysis based on this framework fails to show the necessity of social security and pension reforms, as indicated by many indicators in this policy area and the evaluation by the European Commission (see the 2009 Sustainability Report) which ranks Cyprus as “high risk” with regards to the long-term sustainability of public finances. This is possibly a result of the choice of indicators and weights that needs to be addressed by the users of this framework.²⁹

²⁹ The sustainability sub-score is the average of only two indicators: (1) The projected change in labour force, with a score of 30, implying the best performance in the EU and (2) The Sustainability S2- Long term component, with a score of -14 implying underperformance. Since these two indicators are given equal weights, the overall sub-score is 8 implying a good performance for Cyprus relative to the EU. The Projected Change in the Labour Force indicator should be reconsidered, or given less weight. It is not

4. Conclusions and policy implications

Based on the results and the discussion in the previous sections, four policy areas are identified as underperforming for Cyprus: (i) labour market mismatch and labour mobility, (ii) sector specific regulation (iii) R&D and innovation, and (iv) ICT. On the other hand, two GDP components are identified as underperforming namely (i) capital deepening and (ii) total factor productivity. The underperformance in both of these GDP components is related to low performance in sector-specific regulation, R&D and innovation and ICT policies. Hence, the analysis suggests, the policy makers must focus on the nexus between the underperformance of product market policies and innovation and knowledge policies on the one hand and the underperformance in capital deepening and TFP on the other hand.

Cyprus therefore needs to focus on policies related to R&D and Innovation, ICT, and sector-specific regulation in order to increase productivity and growth. Keeping in mind the small size of the Cypriot economy and its service orientation, R&D will in practice be largely concentrated (at least initially) on public expenditures on education and research infrastructures. This will (i) maintain the highly educated labour force in Cyprus (ii) produce knowledge and patents and, in time, achieve the full exploitation of the research output by Cypriots, (iii) encourage the employment of highly educated labour in the country instead of exporting it to other countries, (iv) use highly educated labour force in their field of study and avoid underemployment, and (v) establish a tradition in the exportation of educational and other related services through the attraction of foreign *bona fide* students. In terms of sector-specific regulations, particular attention should be given to the energy sector. All of the above could improve productivity and increase growth.

Despite the fact that Cyprus performs relatively well in labour market issues, a number of policies could be undertaken in order to improve, or sustain, labour market conditions. Some of the measures mentioned earlier in our analysis are the following: (i) Promoting more active labour market policies and replacing social assistance benefits with in-work benefits to prevent inactivity traps (which may become more prominent in the coming years), (ii) better border control and regulation of immigration

clear whether performance for Cyprus in this indicator is based on an extrapolation from the recent dramatic increases in the number of foreign workers. If so, it is not likely to speak to natural population increases for the local population.

policies in order to prevent illegal immigration and undesirable social conditions, (iii) more childcare facilities offered to working women and the introduction of flexible hours of work, in order to increase female participation and reduce the gender pay gap.

Lastly, in terms of macroeconomic and fiscal policy, Cyprus needs to pay special attention to the sustainability of the social security funds by promoting a pension reform. In addition, a better managing of public finances could be achieved by cutting unnecessary public expenditure and better management in public sector services.

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