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EVALUACIÓN DE LA ESTRATEGIA EUROPA 2020

A TRAVÉS DEL ÍNDICE EUROPA 2020

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1. Introducción

El arte del gobierno es una tarea particularmente compleja. Las políticas públicas están sometidas a un control más o menos estricto, a un mayor o menor nivel de responsabilidad y a una necesidad más o menos fuerte de evaluar su éxito o fracaso. En cualquier caso, una de las principales cuestiones para quienes analizan las políticas públicas es cómo evaluar los resultados de las mismas. Cuanto más amplio es el ámbito de aplicación de la política, tanto más compleja es la tarea de su evaluación.

La complejidad intrínseca en la realización de las políticas públicas a menudo ha sido tratada con un enfoque económico demasiado simplificado, que se centra en un único concepto de resultado, el producto interior bruto (PIB), como indicador de referencia clave de los avances en la sociedad. El análisis económico aplicado se ha centrado a menudo en esta interpretación restrictiva, para proporcionar apoyo analítico y metodológico para el seguimiento y la evaluación de las políticas públicas.

El éxito o el fracaso de las políticas públicas difícilmente puede medirse con un enfoque reduccionista. Se requiere una capacidad de análisis más amplia. Aún reconociendo la relevancia del PIB como indicador de los resultados económicos, este debe sin embargo complementarse con otras medidas, que tengan en cuenta la distribución de la renta, por ejemplo, y factores no estrictamente económicos, como el impacto social y medioambiental de las políticas. Una contribución importante en este sentido fue la de la Comisión para la medición del rendimiento económico y el progreso social (informe Stiglitz et al., 2009), publicada en septiembre de 2009.

Hoy, gracias a una abundancia sin precedentes de nuevos datos, indicadores y estadísticas, podemos avanzar hacia la mejora de la medición y el análisis de las políticas públicas. Las estadísticas pueden ayudarnos a concentrar la complejidad de la intervención gubernamental en indicadores precisos para informar a los responsables políticos y los ciudadanos.

El reconocimiento de la necesidad de un planteamiento más amplio para el seguimiento y la evaluación de las políticas públicas han guiado la concepción de la principal estrategia de

desarrollo para la década actual en la Unión Europea (UE): la Estrategia Europa 2020, que se puso en marcha en marzo de 2010.

La Estrategia Europa 2020

La Estrategia Europa 2020 es la nueva estrategia para el crecimiento y el empleo en la Unión Europea (UE).[1] Fue lanzada por la Comisión Europea en marzo de 2010 y adoptada por los Jefes de Estado y de Gobierno de los veintisiete Estados miembros (EM) en el Consejo Europeo del 17 de junio de 2010. Esta estrategia se propone como la sucesora de la Estrategia de Lisboa, que caracterizó la década anterior, de 2000 a 2010, y tiene como objetivo el de reactivar los esfuerzos comunes en la Unión Europea hacia el conseguimiento de un crecimiento que sea inteligente (*smart growth*), sostenible (*sustainable growth*) e inclusivo (*inclusive growth*).

La nueva estrategia es el resultado de una decisión política encaminadas a abordar los principales desafíos estructurales a los que se enfrenta la UE. Esta representa una prioridad política más que un ejercicio analítico. La propuesta de la Comisión identifica tres prioridades como pilares principales de la estrategia:

- Crecimiento inteligente: desarrollo de una economía basada en el conocimiento y la innovación.
- Crecimiento sostenible: promoción de una economía que utilice más eficazmente los recursos, que respete al medioambiente y sea más competitiva.
- Crecimiento inclusivo: fomento de una economía con alto nivel de empleo y de cohesión económica, social y territorial.

Con el fin de superar las deficiencias estructurales de la economía europea, mejorar su competitividad y productividad y sustentar una economía social de mercado sostenible (Comisión Europea, 2010).

La Estrategia Europa 2020 fija una serie de objetivos concretos para la década en áreas tales como el empleo, la educación, el consumo energético y la innovación, para superar las consecuencias de la crisis financiera y fomentar el crecimiento económico.

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[1]   http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF

Los ámbitos clave de la estrategia se expresan en forma de cinco objetivos principales a escala de la UE, que incluyen unos indicadores económicos, medioambientales y sociales. Los indicadores elegidos son los siguientes:

- El 75 % de la población de edad comprendida entre 20 y 64 años debería estar empleada, con una mayor participación de las mujeres y de las personas de edad avanzada en el mercado laboral y una mejor integración de los inmigrantes.

  La tasa de empleo es el de indicador elegido, ya que ofrece una mejor base para la comparación. Contrariamente a la Estrategia de Lisboa, el límite inferior se ha aumentado a 20 años, para tener mejor en cuenta la realidad del mercado de trabajo. El límite máximo se ha mantenido, aunque se han observado cambios legislativos en algunos Estados miembros.

- El 3 % del PIB de la UE debería ser invertido en I+D, al fin de mejorar las condiciones para impulsar las inversiones públicas y privadas.

  Este indicador tradicional tiene por objeto medir un motor esencial del crecimiento económico. No obstante, al aplicar las políticas, la eficiencia y la eficacia del gasto (sobre todo públicos) deben ser objeto de un análisis detallado. El déficit europeo en inversiones en I+D, comparado con otras grandes áreas económicas, da lugar a que el crecimiento sea insuficiente para crear empleo (los indicadores de objetivos están interrelacionados). Este déficit se debe principalmente a la falta de inversiones privadas.

- Los objetivos «20/20/20» en materia de clima y energía: las emisiones de gases de efecto invernadero deben reducirse en un 20% en comparación con 1990; la cuota de fuentes de energía renovables en el consumo final de energía debe incrementarse un 20%; la eficiencia energética debe mejorarse en un 20%.

  Estos tres indicadores son complementarios, ya que miden simultáneamente el umbral de emisiones absolutas, el origen de la energía y la eficiencia energética. Podemos utilizar estos indicadores para representar nuestra capacidad para mantener el actual nivel de vida, comprobando si el funcionamiento de nuestra actividad económica amenaza que las generaciones futuras puedan disponer del mismo "capital medioambiental".

- El porcentaje de abandono escolar debería ser inferior al 10 %; y al menos el 40 % de las personas de 30 a 34 años deberían haber completado un ciclo de educación terciaria o equivalente.

Las políticas que se están aplicando ahora surtirán efecto en 2025, o incluso en 2030, en el grupo de edad de 30 a 34 años. La importancia de esta medida se refiere a la necesidad de encontrar un equilibrio entre la oferta y la demanda de trabajo, vinculando la educación universitaria con las oportunidades en el mercado laboral. Por lo que se refiere al 40% de las personas de 30 a 34 años con estudios, la idea subyacente es que la proporción de científicos e ingenieros debería aumentar de manera significativa y, más en general, la empleabilidad de los estudiantes debe ser mejorada.

- La pobreza debe reducirse sacando al menos a 20 millones de personas del riesgo de pobreza o de exclusión social. Con vistas a su eficiencia y eficacia, las políticas sociales pueden cuantificarse y ser evaluadas sobre la base de objetivos realistas. El indicador de la tasa de pobreza tradicional mide más la desigualdad en la distribución de la renta que la propia pobreza. Se complementa este indicador con el de personas que viven en hogares con muy baja intensidad de trabajo, es decir hogares en que muchos o todos son desempleados, y con el indicador de grave privación material, así se obtiene un indicador compuesto que mide de forma más realista el riesgo de pobreza.

Cada Estado miembro ha adoptado sus propios objetivos nacionales en cada uno de estos ámbitos, que reflejan las diferentes situaciones de partida y circunstancias nacionales.

Gobernanza de la estrategia

La puesta en marcha de la Estrategia Europa 2020 marcó el comienzo de la Comisión Barroso II, y fue el resultado de un consenso político entre los Gobiernos de los 27 Estados miembros para hacer frente a los principales retos estructurales de la UE.

La nueva iniciativa intenta superar uno de los principales puntos débiles de la Estrategia de Lisboa: la falta de un sistema general de control de los resultados obtenidos por los Estados miembros en la realización de objetivos comunes (Martens, 2010). Tanto la Estrategia de Lisboa como la Estrategia Europa 2020 necesitan basar su estructura de gobierno en un enfoque de acción coordinada entre los Estados miembros y las instituciones europeas.

Una de las razones principales por las que estrategias supranacionales de este tipo pueden fracasar, no alcanzando sus objetivos, es que algunos de los principales ámbitos de actuación en que se centran no entran dentro del ámbito de competencia de la UE. La mayoría de los

principales objetivos de Lisboa, por ejemplo, se refería a los ámbitos en los que la UE no tiene ninguna competencia judicial (Erixon, 2010). La acción política a nivel nacional, entonces, puede determinar la eficacia de toda la estrategia.

Una segunda razón que a menudo se utiliza para explicar por qué la Estrategia de Lisboa no ha obtenido los resultados esperados está relacionada con la falta de un sistema adecuado de seguimiento y de evaluación de los resultados, basado en indicadores claros, precisos y puntualmente medidos. El riesgo para la Estrategia Europa 2020 era mantener estas debilidades intrínsecas en su arquitectura (Sarcinelli, 2011).

En la elaboración de esta nueva estrategia, por tanto, había conciencia de que un progreso verificable podría hacerse solamente si las políticas se sometían a evaluación. Por este motivo un conjunto de ocho indicadores, con objetivos y resultados esperados, se ha propuesto y ha sido aceptado por los Estados miembros.

Se han realizado algunos intentos de utilizar estos indicadores para estudiar los primeros resultados de la estrategia. Está claro que una estrategia supranacional tan dependiente de las iniciativas y las acciones de los gobiernos nacionales requiere un reforzamiento del mecanismo de control y una mayor responsabilidad por parte de los Estados miembros.

La gran complejidad de esta estrategia está estrechamente vinculada a la muy peculiar arquitectura de la UE (Jachtenfuchs, 2010). Uno de los elementos clave de la integración europea ha sido la dilución de la soberanía nacional a través de la toma de decisiones colectiva y las instituciones supranacionales (Marks et al., 1996). El concepto de gobierno multinivel se ha convertido en una herramienta para comprender la interacción entre los distintos niveles de gobierno y de Gobierno (Hooghe y Marks, 2010).

El problema fundamental, por lo que aquí interesa, se refiere al hecho de que múltiples niveles de gobierno pueden conducir a un déficit en la rendición de cuentas democrática (Papadopoulos, 2010).[2] Por otra parte, existe un problema de efectividad de una estrategia acordada a nivel supranacional, pero cuyos instrumentos principales quedan anclados principalmente a nivel nacional.

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2   Papadopoulos, en particular, hace referencia a la falta de visibilidad de los responsables de la toma de decisiones, el desacoplamiento de la toma de decisiones políticas de las instituciones representativas, la composición de redes que sigue estando alejada de los ciudadanos, y los problemas de la gobernanza multinivel en sí misma.

El papel de los gobiernos nacionales será decisivo para determinar el éxito o el fracaso de esta estrategia. Por consiguiente, la necesidad de mejorar la rendición de cuentas implica que sea necesario redoblar los esfuerzos en la evaluación de las distintas medidas aplicadas a nivel nacional. El conjunto de indicadores acordados es fundamental para garantizar un adecuado sistema de control y seguimiento.

En el momento en que se puso en marcha la Estrategia Europa 2020, las tres dimensiones de crecimiento identificadas como principales pilares de esta estrategia (crecimiento inteligente, sostenible, e integrador) estaban asociadas a un conjunto de indicadores medibles, entendibles, aceptados, precisos y de fácil seguimiento para evaluar el conseguimiento de los objetivos y también para poder comparar los avances realizados por cada país. Estos indicadores oficiales forman la base del nuevo instrumento que se construye en este trabajo.

2. Objetivos

Este trabajo se propone estudiar la Estrategia Europa 2020, o sea la estrategia comunitaria que marca las prioridades políticas de la Unión Europea en la década que empieza en 2010. El *objetivo principal* es en primer lugar el de construir una herramienta metodológica que permita el seguimiento de la estrategia, y en segundo lugar utilizar esta herramienta para evaluar la misma.

La *contribución a la literatura* científica sobre este tema consiste en dos aportaciones fundamentales:

- primero, se desarrolla un índice compuesto sintético para cuantificar, medir y seguir los progresos realizados por los Estados Miembros en el perseguimiento de los objetivos fijados por la estrategia;

- segundo, se utiliza este mismo índice para estudiar los factores claves que determinan el éxito o el fracaso de los Estados Miembros hacia el logro de los objetivos de la estrategia Europa 2020.

La primera contribución es de tipo metodológico, y consiste en la construcción de un nuevo instrumento de análisis: un índice compuesto, basado en los indicadores oficiales de la Estrategia 2020, los cuales fueron decididos y aceptados por los Jefes de Estado y de Gobierno que formaban parte de la UE en 2010, así como por la Comisión Europea.

La segunda contribución es más bien analítica y consiste en investigar cuáles son los factores críticos que determinan una mejor realización de los objetivos propuestos por la estrategia, por parte de los Estados Miembros de la UE, y que explican por qué algunos países tienen resultados mejores en la Estrategia.

De cara a desarrollar esta segunda contribución, la ***hipótesis principal*** de este trabajo es que, a pesar de la atención que en los últimos años se ha puesto en los aspectos económicos y de finanza pública en la UE, dada la naturaleza intrínsecamente compleja del sistema de gobierno con múltiples niveles en que debe realizarse la Estrategia Europa 2020, los factores institucionales (en el sentido de Douglas North, 1991) son más decisivos para el éxito de la Estrategia 2020. Se consideran tanto las así llamadas instituciones formales (gobernanza), como las instituciones informales (capital social).

Metodología

Sobre la base de los ocho indicadores oficiales elegidos por la Comisión Europea y por los Estados miembros, el presente trabajo propone la construcción de índices específicos para cada una de las tres dimensiones principales de la Estrategia, y sucesivamente desarrolla un índice sintético, llamado de «Europa 2020», con el fin de permitir una cuantificación precisa de la capacidad de cada Estado miembro de conseguir los objetivos de la estrategia. Este índice pretende dar una forma concreta a esta iniciativa política, teniendo en cuenta las diferentes dimensiones y prioridades políticas, y permitiendo al mismo tiempo la cuantificación, la medición y el seguimiento de sus progresos.

Tres índices temáticos pueden ser creados mediante la agrupación de los ocho indicadores, en una manera que refleje los tres pilares de la Estrategia Europa 2020:

- El índice de crecimiento inteligente (SMGI),
- El índice de crecimiento sostenible (SUGI),
- El índice de crecimiento integrador (INGI),

Estos, a su vez, componen el índice principal, es decir el Índice Europa 2020.

Una vez construido este índice, se utiliza en una serie de regresiones simples lineales, estudiando su correlación con otras importantes medidas. Sucesivamente se estudia su correlación con los factores institucionales y macroeconómicos. Finalmente se utiliza un modelo econométrico de regresión múltiple (*panel regression analysis*) para comparar el impacto de los factores institucionales con respeto a los demás, en el conseguimiento de los objetivos de la Estrategia 2020.

3. Resumen global de los resultados

La estrategia empírica se basa en una amplia muestra de 270 observaciones, que abarca 27 países durante un período de diez años, desde 2003 a 2012, que son todos aquellos para los que el Índice Europa 2020 puede calcularse. El modelo tiene el Índice Europa 2020 como variable dependiente (E2I). Las instituciones formales se incluyen en el modelo a través del concepto de buena gobernabilidad. El indicador de eficacia de la administración (GOVEFF), se utiliza como medida de la buena gobernabilidad.[3] Las instituciones informales también se incluyen en el modelo, a través del concepto de capital social. Utilizamos el indicador de grado de confianza interpersonal (TRUST), de la World Values Survey, como medida de capital social.[4] Los indicadores de sostenibilidad de las finanzas públicas considerados en el modelo son la deuda bruta de las administraciones públicas (DEBT), y el déficit de las administraciones públicas o superávit (DEFICIT), ambos calculados en porcentaje del PIB y derivados de la base de datos Ameco. Por último, hemos incluido dos variables independientes adicionales: Crecimiento del PIB (GROWTH) y el PIB per cápita medido en niveles de poder adquisitivo (GDPPPS) calculados por Eurostat.

El modelo investiga el papel de las seis variables explicativas en determinar los resultados de la Estrategia Europa 2020. En primer lugar, hemos incluido solo las dos variables institucionales, encontrando un coeficiente de determinación del 56 %, lo que significa que las dos variables por si solas explican más de la mitad del total de la variación en el índice. Cada una de las variables institucionales, además, tienen un alto nivel de significatividad (p = 0.000) y coeficientes positivos.

Progresivamente se integra el resto de variables, con el fin de comprender si añaden poder explicativo al modelo: podemos constatar que la deuda y el déficit no añaden mucho poder explicativo, además tienen un bajo nivel de significatividad y coeficientes próximos a cero. El nivel del PIB per cápita en paridad de poder adquisitivo tiene el mismo efecto nulo sobre nuestra variable dependiente. El crecimiento del PIB es el único que muestra cierta importancia, pero está asociado a un coeficiente extremadamente bajo, próximo a cero. Podría considerarse significativo en la regresión, pero que no influye en la variación de nuestro índice.

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3   Disponible en: info.worldbank.org/governance/wgi

4   Disponible en: www.worldvaluessurvey.org

La eficacia de la administración y la confianza, por el contrario, mantienen su gran importancia en todas las especificaciones del modelo y los efectos estimados son muy relevantes. Un incremento de una unidad del indicador de efectividad gubernamental, manteniendo constantes todas las demás variables, da lugar a un aumento del índice de Europa 2020 de 0.079 unidades, mientras que el mismo incremento en la medida de confianza (TRUST) corresponde a un aumento en el índice de 0.548 unidades. Ninguna de las otras variables tiene un coeficiente considerablemente diferente de cero en cualquiera de las especificaciones del modelo.

4. Discusión de los resultados

Los resultados del análisis realizado, en cuanto a los principales factores que afectan al rendimiento de los Estados miembros de la UE en la consecución de los objetivos de la Estrategia Europa 2020, confirman la hipótesis de que las instituciones juegan un papel relevante.

Las instituciones formales e informales parecen tener un papel decisivo a la hora de explicar las distintas actuaciones de los países europeos en el marco de la Estrategia Europa 2020, más que las otras variables económicas, basadas en el PIB. Las instituciones formales e informales desempeñan un papel destacado en esta compleja estrategia de desarrollo, y el capital social en particular es el factor más relevante.

Estos resultados confirman la hipótesis "institucional", lo que parece indicar que la eficacia de la elaboración de políticas públicas depende en gran medida de factores contextuales, y que el entorno institucional en el que estas se efectúan, de hecho, puede determinar en buena medida sus posibilidades de éxito. Asimismo, confirman la complementariedad entre instituciones formales e informales, en particular entre el capital social y la buena gobernabilidad.

Un marco institucional caracterizado por una gobernabilidad eficaz proporciona un entorno propicio para que se desarrollen y funcionen redes locales, que constituyen una especie de "aglutinante social" que contribuye a una mayor estabilidad al sistema. En este contexto favorable una estrategia de desarrollo puede aplicarse de manera más eficaz.

Los resultados del análisis confirman la hipótesis de que la buena gobernabilidad es particularmente importante en dicha estrategia. Como hemos visto anteriormente, muchos de los ámbitos políticos en los que la Estrategia Europa 2020 se centra superan al ámbito de

competencias directas de la UE, y esto implica que la elaboración de la política nacional desempeña un papel decisivo a la hora de determinar la eficacia de la estrategia europea global y la capacidad para alcanzar sus objetivos. Nuestro análisis ha demostrado la intuición inicial de que buena parte de las diferencias entre países en conseguir los objetivos de la Estrategia 2020 depende de la calidad de la gobernancia a nivel nacional.

El papel del capital social, también, parece ser especialmente importante. Sociedades más cohesionadas son también las que están mejor equipadas para perseguir una amplia estrategia de desarrollo. Una estrategia basada en varios pilares, cuyo alcance va mucho más allá de la noción estricta de crecimiento del PIB, parece requerir un nivel elevado de capital social, por lo que se refiere a su componente de confianza interpersonal.

Esto es coherente con lo que habían encontrado anteriores estudios sobre el papel del capital social en relación con el desarrollo. Grootaert y Van Bastelaer (2002), por ejemplo, sugieren que "la densidad de las redes sociales y las instituciones, así como las interacciones directas entre las personas, afectan de manera significativa a la eficacia y la sostenibilidad de los programas de desarrollo", como en nuestro caso la Estrategia Europa 2020.

Estos resultados también encuentran apoyo en anteriores análisis (Easterly, 2002; Rodrik, 2003; Dixit, 2009), que sugieren que la calidad de las instituciones se vuelve cada vez más decisiva para conseguir un mayor nivel de desarrollo, que es especialmente interesante para nuestro caso de una estrategia de desarrollo para un grupo de economías desarrolladas, como los Estados miembros de la UE.

La constatación de que tanto el capital social como la buena gobernabilidad son el principal factor determinante del éxito en la Estrategia Europa 2020 también confirma la sugerencia de algunos autores (Grootaert y Van Bastelaer, 2002) de que un "concepto más amplio de capital social incluye el entorno macroeconómico, social y político, que conforma la estructura social y permite a las normas formales e informales desarrollarse".

Otros, como Gros y Roth (2012), mencionan explícitamente la pertinencia de los factores institucionales para la Estrategia Europa 2020. Estos sostienen que sus objetivos pueden lograrse mejor con adecuadas inversiones en capital humano y social y con instituciones más eficaces. Alegan que la calidad de las instituciones es más importante que otros factores, y que "un nivel suficiente de eficacia de la administración es una condición indispensable para que la UE en su conjunto sea más competitiva".

5. Conclusiones

La complejidad intrínseca de la Estrategia Europa 2020, que abarca ámbitos en los que la Comisión Europea no tiene competencia jurisdiccional plena, aumenta la importancia de un sistema de seguimiento oportuno y preciso y de un marco institucional eficaz y eficiente. Una estrategia supranacional dependiente de iniciativas y acciones de los gobiernos nacionales exige un mecanismo de seguimiento sólido con un elevado grado de responsabilidad por parte de los Estados miembros. Con el fin de lograr los mejores resultados posibles, es importante además entender cuáles son los principales factores que determinan los resultados en el intento de alcanzar los objetivos de la estrategia. Esta tesis aporta contribuciones en ambas direcciones.

En primer lugar hemos construido un Índice Europa 2020 y lo hemos aplicado al análisis de los factores críticos para la consecución de los objetivos de la estrategia. El Índice Europa 2020 constituye un potente instrumento para seguir los resultados de los Estados miembros de la UE hacia la consecución de los objetivos de la estrategia, según lo definido por los ocho indicadores oficiales. El índice permite un seguimiento anual y puede construirse ya para un periodo de diez años consecutivos, a partir de 2003. Se observan algunas diferencias en el nivel de resultados, entre los distintos países y a lo largo del tiempo.

El análisis externo del índice confirma que la competitividad es un elemento importante de la estrategia, como la extremadamente fuerte correlación con el índice de competitividad mundial indica. Los niveles de globalización, en cambio, son cada vez menos relevantes para explicar las diferencias entre países, lo que indica que se está produciendo una cierta convergencia en el grado de apertura de los estados miembros de la UE.

La necesidad de comprender mejor los factores determinantes de las diferencias de rendimiento inspira un análisis de posibles factores de éxito, como el nivel de riqueza, crecimiento, sostenibilidad de las finanzas públicas y las instituciones. Se recurrió a la literatura de la así llamada "economía institucional" en busca de orientación, convencidos de que una estrategia tan amplia, supranacional, compleja, y caracterizada por la intervención de varios niveles de gobierno, requeriría un compromiso político continuo, y algo más que la coordinación de las políticas económicas. Nuestra hipótesis era que las instituciones (en el sentido de North, 1991) podrían ser las principales variables explicativas, y hemos decidido examinar ambas medidas de instituciones formales e informales junto con otros indicadores económicos basados en el PIB, para entender cuáles eran los más relevantes.

Un primer análisis basado en simples correlaciones puso de manifiesto que los factores institucionales podrían desempeñar un papel más importante para alcanzar los objetivos de la Estrategia Europa 2020. Tal es el caso de los factores institucionales formales como indicadores de buen gobierno, así como de las instituciones informales, como un indicador de capital social.

Un análisis econométrico más profundizado, basado en una regresión múltiple, ha confirmado la importancia clave de las instituciones formales e informales, tanto en términos absolutos como relativos, en comparación con los otros factores considerados. Las variables institucionales resultan ser las más importantes, con efectos relevantes y significativos.

Los resultados sugieren que los factores institucionales son más determinantes que los otros criterios macroeconómicos basados en el PIB, a la hora de explicar los distintos resultados de los países europeos en el marco de la Estrategia Europa 2020. Las instituciones formales e informales desempeñan un papel más importante en la estrategia de desarrollo, y el papel del capital social, además, es especialmente relevante.

Estos resultados confirman la hipótesis "institucional", lo que parece indicar que la eficacia de la elaboración de políticas depende en gran medida de factores contextuales, y que el entorno institucional en el que se efectúa, de hecho, puede determinar una gran parte de sus posibilidades de éxito.

Los resultados no implican que el crecimiento económico, los niveles de PIB per cápita, y la sostenibilidad fiscal no sean objetivos importantes en sí mismos. Las principales conclusiones de nuestro análisis son que, para alcanzar los objetivos de la Estrategia Europa 2020, la elaboración de políticas debería adoptar un enfoque más amplio, incluyendo el papel de las instituciones.

Si los factores institucionales son tan pertinentes como la consolidación fiscal para el cumplimiento de los objetivos de la Estrategia Europa 2020, o incluso más pertinentes, según lo que sugieren nuestros resultados, entonces la actual agenda de reformas estructurales casi exclusivamente centrada en mejoras de competitividad basadas en la disminución del coste del trabajo podría cambiar, incluyendo una mayor atención al papel de las instituciones.

Este trabajo también tiene por objetivo proporcionar una base para nuevas investigaciones. En particular, podría realizarse un análisis incluso más detallado, si pudiéramos recopilar datos a escala regional para los ocho indicadores que componen el índice. Esto podría ayudarnos a

profundizar nuestro conocimiento sobre los factores clave del éxito de la Estrategia Europa 2020.

The Europe 2020 Index

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Abstract   This paper presents a new index to quantify, measure and monitor the progress towards the objectives of the Europe 2020 strategy. This index is based on a set of relevant, accepted, credible, easy to monitor and robust indicators presented by the European Commission at the time the strategy was launched. The internal analysis of the index shows that the Smart and the Inclusive growth dimensions of the strategy are strictly correlated and that the trade-offs between each of these two dimensions and the Sustainable one exist but are decreasing, suggesting that a change towards more sustainable models of development is occurring in Europe. The external analysis of the index shows that it can be a valid measure to assess the overall competitiveness of countries and that the most critical factors for this strategy to be successful are good governance and social capital.

Keywords   Europe 2020 · Indicators · Governance · Social capital

1 Introduction

In March 2010 the European Commission launched its proposal for a 10-year development strategy for the European Union (EU) to address the immediate challenge of moving out of the crisis, but also "to escape the reflex to try to return to the pre-crisis situation" when in many areas it was not progressing fast enough. Three priorities were identified as main pillars of this Europe 2020 strategy to "offer a vision of Europe's social market economy for the 21st century": Smart growth—developing an economy based on knowledge and

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innovation; Sustainable growth—promoting a more resource efficient, greener and more competitive economy; Inclusive growth—fostering a high-employment economy delivering economic, social and territorial cohesion (European Commission 2010). The new strategy is intended to address the main structural challenges the EU faces and can be considered as the successor of the Lisbon strategy.

One of the main shortcomings of the Lisbon strategy was related to the inappropriate use of statistical indicators, which were not used in the context of an ongoing monitoring process of the policy in the course of its implementation, as argued by some authors (Saltelli et al. 2011). This paper presents a new index to quantify, measure and monitor the progress realised by the 27 member states of the European Union towards the achievements of the objectives set by the new strategy and aims at identifying the critical factors for such a strategy to be successful. Section 2 of the paper presents the structure of the index; Section 3 shows its calculation. The internal consistency of the index is tested in Section 4, and an analysis of its external validity is presented in Section 5, focusing on the relations between the index and the main macroeconomic indicators in Section 6, and the main measures of good governance in Section 7. Finally Section 8 presents some policy conclusions.

2 Structure of the Index

When the Europe 2020 strategy was launched, three dimensions of growth were identified as main pillars of this strategy and they were associated to a set of measurable, accepted, easy to monitor and robust indicators to assess the progress towards the objectives and also for purposes of comparison. On this basis, this paper builds a specific index for each of the three main dimensions of the Europe 2020 strategy and develops a synthetic "Europe 2020 Index" to allow a quantification of the relative position of each member state towards the objectives of the strategy. This index seeks to give a concrete form to this policy initiative, in a way that accounts for the different dimensions and policy priorities, and in a manner that allows quantification and monitoring of its progress.

The eight indicators proposed by the European Commission to monitor the Europe 2020 strategy are:

– Tertiary education attainment (TEDU) (2000–2009)
– Gross domestic expenditure on R&D (GERD) (1990–2009)
– Greenhouse gas emissions (GGE) (1990–2008)
– Share of renewable energy in gross final energy consumption (RNEW) (2006–2008)
– Energy intensity of the economy (EINT) (1990–2008)
– Employment rate of the population aged 20–64 (EMPL) (1992–2009)
– Early leavers from education (SCHO) (1992–2009)
– Population at-risk-of-poverty or exclusion (POV) (2003–2009)

They are calculated at national level by Eurostat and their detailed definitions and explanations are presented in Annex 1. Some of them have quite long time series available, since the early nineties, but others only cover a more limited time span (just 3 years for RNEW).

Three thematic indices can be created by grouping these indicators, reflecting the three main pillars of the Europe 2020 strategy: the Smart Growth Index (SMGI), the Sustainable Growth Index (SUGI), and the Inclusive Growth Index (INGI), which in turn form the Europe 2020 Index. The first assumption of this paper is to link each indicator to only one dimension of the strategy. So tertiary education attainment (TEDU) and gross expenditures on R&D (GERD) are considered the main drivers of the Smart Growth dimension;
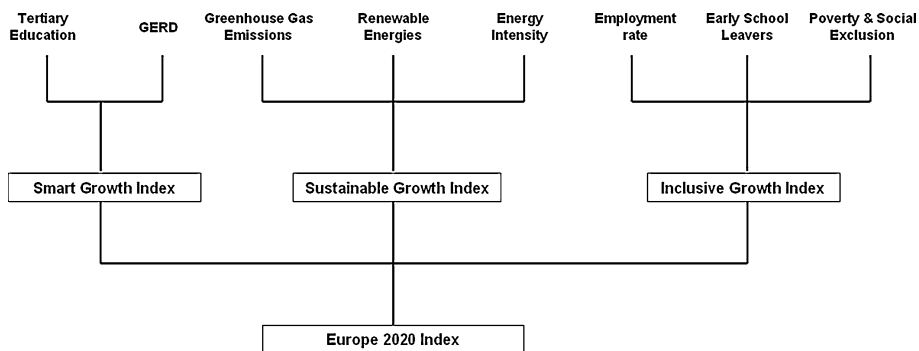
Fig. 1 Structure of the index

greenhouse gas emissions (GGE), the share of renewable energy (RNEW), and the energy intensity of the economy (EINT) are the components of the Sustainable Growth dimension; and employment rate (EMPL), the rate of early school leavers (SCHO) and the share of the population at risk of poverty or social exclusion (POV) determine the Inclusive Growth Index. Figure 1 shows the structure of the Index.

As we can notice, the three dimensions of growth of the Europe 2020 strategy do not include explicitly a measure of GDP, but focus more on other dimensions of an overall development strategy. This approach is consistent with the idea of going beyond GDP as a single measure of progress for countries (Stiglitz et al. 2009. The three dimensions of smart, sustainable and inclusive growth however are complementary to economic growth. It will be nevertheless interesting to compare this index with other dimensions of human and economic development available in the literature.

The data used are extracted by Eurostat and at the moment the largest common period for which all of them are available is from 2006 to 2008, being the shortest time series for the RNEW indicator. As a consequence the SUGI and the Europe 2020 Index can only be built for these 3 years, but the SMGI can be calculated for the period 2000–2009, and the INGI for the period 2003–2009.

Table 1 provides the summary statistics for these indicators showing the mean over the available time periods, the standard deviation, minimum and maximum.

3 Calculation of the Index

The eight indicators represent different facets of development; therefore they are presented in different units and scales. The first step to make them comparable so that they can be aggregated is to normalise them, in a way that all the values are comprised between one and zero. For "positive" indicators, like TEDU, GERD, RNEW and EMPL, I apply:

$$X_{ic} = \frac{x_{ic} - \min_k\{x_{ik}\}}{\max_k\{x_{ik}\} - \min_k\{x_{ik}\}} \tag{1}$$

where i is the indicator (TEDU, GERD, RNEW, or EMPL), c the country, and $\max_k$ and $\min_k$ are the maximum and minimum value of that indicator across the whole period available. Annex 2 presents the values considered for each indicator. For "negative" indicators, those for which a higher value represents worse performance, like GGE, EINT, SCHO, and POV, I apply:

Table 1 Descriptive statistics of the indicators used

Variable	Mean	SD	Min	Max
TEDU	27.67	10.59	7.40	49.00
GERD	1.42	0.85	0.22	4.13
GGE	95.04	27.42	38.10	193.90
RNEW	12.29	10.54	0.10	44.40
EINT	409.80	388.85	103.13	2306.38
EMPL	68.03	6.19	51.30	81.10
SCHO	17.51	10.52	4.10	54.40
POV	23.96	8.63	13.90	61.30

$$X_{ic} = \frac{\max_k \{x_{ik}\} - x_{ic}}{\max_k \{x_{ik}\} - \min_k \{x_{ik}\}} \tag{2}$$

where i is the indicator (GGE, EINT, SCHO, or POV), c the country, and $\max_k$ and $\min_k$ are the maximum and minimum value of that indicator across the whole available time series, as shown in Table 2.

The normalised indicators can now be aggregated in order to build the three indices. These, in turn, can be further aggregated to produce the synthetic Index. In the aggregation process I use equal weights, giving the same relevance to all the components of the index. The three sub-indices represent three major pillars of the Europe 2020 Strategy, and they have been conceived as equally important. The indicators which compose each sub-index are also equally weighted, in order not to give any priority to one or another. It is clear that being the SMGI based on two instead of three indicators, like the SUGI and the INGI, these end up having an overall higher impact on the final value of the Europe 2020 Index. However, what is more relevant here is that the three dimensions of the strategy, represented by the three sub-indices, have equal weights.

One simple way to construct the index by aggregating the indicators, in a first stage, and then the sub-indices is to apply the linear aggregation method (OECD 2008) by calculating the average of the values of the different components for each index, applying:

$$I_g = \frac{1}{n} \sum_{i=1}^{n} Xi \tag{3}$$

Table 2 Descriptive statistics of the normalised indicators

Variable	Mean	SD	Min	Max
TEDU	0.56	0.25	0.120	0.959
GERD	0.32	0.23	0.054	0.895
GGE	0.62	0.21	0.001	0.963
RNEW	0.28	0.24	0.001	1.000
EINT	0.91	0.10	0.552	1.000
EMPL	0.65	0.19	0.211	0.977
SCHO	0.79	0.17	0.288	1.000
POV	0.77	0.20	0.001	1.000

where I_g is the index, and X_i the indicator of which it is built. By calculating the arithmetic mean, we could obtain a value for each country, and rank all of them. It seems however more reasonable to use a geometric aggregation method, instead of the linear one: the main difference is that by aggregating indicators through a geometric mean high differences between the values of the components are taken into account and "penalised", with respect to a series with more homogeneous values for its components. The geometric mean accounts for the deviation from the average and satisfy the property of interval-scale unit comparability, while the arithmetic one does not (Ebert and Welsch 2004).

The linear aggregation method implies full compensability among the components, such that poor performance in some indicators can be compensated for by sufficiently high values in other indicators (OECD 2008). For example, a country with an excellent performance in the Smart dimension (say 0.9) and a poor performance in the Sustainable and Inclusive dimensions (say 0.1 for both) and another with a more balanced profile (for instance $SUGI = 0.4, SMGI = 0.4, INGI = 0.3$) would have exactly the same score under the linear aggregation method (0.37), but quite different ones under the geometric one (0.21 for country 1, 0.36 for country 2). On the other hand, it must be kept into account that when we use the geometric aggregation method the marginal utility of an increase in the score would be much higher for low absolute values of the score, consequently a country has a greater incentive, compared to the linear method, to address those areas where it performs badly, as this would give it better chances to improve its position in the ranking (OECD 2008).

In other words, for our purposes of cross-country comparison, choosing the geometric method means rewarding those countries presenting more equilibrated values of the three main components of the Index, i.e. including a mechanism to reward more balanced profiles of development. Therefore the formula to be applied becomes:

$$I_g = \left(\prod_{i=1}^{n} Xi \right)^{\frac{1}{n}} \tag{4}$$

In some cases[1] where the value of the indicator for one country equals the lower bound in the normalisation formula (see annex 2) the value would become zero, and the geometric aggregation method would imply a value of zero for the overall index. This problem has been solved by assigning, in those three cases, the lowest possible score different from zero to the value of the normalised indicator, i.e. 0.001.

The full set of indices corresponding to the three main dimensions of the Europe 2020 strategy, calculated by applying 4 to the eight indicators, is presented in Table 1 for the years 2006, 2007 and 2008, together with the ranking of each country for each index (in brackets) (Table 3).

Figure 2 shows the Europe 2020 profiles for the six biggest countries, in terms of population, of the EU. France and Germany have similar values in all the three dimensions, similar to the UK, which differs from the other two only for the "sustainability" dimension, where it performs lower than the other countries as well. Spain and Italy show similar profiles, except for the "smart growth" dimension, where Spain performs much better. Poland has a profile which is close to the Italian one, performing a bit better in the INGI and SUGI, and a bit worse in the SMGI.

Accordingly, by applying 4 to the three thematic indices, the synthetic Index can be created. In this case as well, as previously explained, I apply (4) instead of (3) in order to

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[1] $\max^{GGE} = 193.90$ (Cyprus 2008), $\min^{RNEW} = 0.10$ (Malta 2006), $\max^{POV} = 61.30$ (Bulgaria 2006).

Table 3 Countries' scores in the three thematic indices

	2006						2007						2008					
	SMGI		SUGI		INGI		SMGI		SUGI		INGI		SMGI		SUGI		INGI	
Belgium	0.585	(5)	0.328	(21)	0.709	(15)	0.593	(5)	0.346	(21)	0.729	(17)	0.616	(5)	0.355	(21)	0.739	(17)
Bulgaria	0.163	(25)	0.460	(13)	0.070	(27)	0.162	(25)	0.463	(14)	0.179	(27)	0.174	(24)	0.478	(14)	0.563	(25)
Czech Rep	0.216	(20)	0.439	(16)	0.842	(7)	0.219	(20)	0.461	(15)	0.867	(6)	0.248	(19)	0.466	(16)	0.874	(5)
Denmark	0.703	(3)	0.601	(8)	0.928	(1)	0.709	(3)	0.632	(7)	0.901	(2)	0.796	(3)	0.650	(7)	0.919	(2)
Germany	0.513	(8)	0.481	(12)	0.782	(12)	0.521	(8)	0.529	(11)	0.809	(10)	0.554	(8)	0.529	(12)	0.832	(9)
Estonia	0.375	(14)	0.649	(5)	0.821	(8)	0.374	(14)	0.647	(5)	0.826	(8)	0.419	(14)	0.679	(5)	0.833	(8)
Ireland	0.463	(10)	0.307	(23)	0.794	(10)	0.486	(9)	0.323	(23)	0.803	(11)	0.541	(9)	0.336	(23)	0.782	(14)
Greece	0.207	(21)	0.410	(18)	0.632	(18)	0.204	(22)	0.421	(18)	0.648	(19)	0.201	(23)	0.429	(19)	0.655	(20)
Spain	0.430	(12)	0.381	(20)	0.606	(20)	0.455	(11)	0.376	(20)	0.612	(20)	0.474	(11)	0.425	(20)	0.591	(22)
France	0.611	(4)	0.508	(11)	0.768	(14)	0.623	(4)	0.522	(12)	0.774	(15)	0.628	(4)	0.536	(11)	0.787	(11)
Italy	0.240	(16)	0.398	(19)	0.573	(22)	0.257	(17)	0.398	(19)	0.583	(23)	0.271	(17)	0.440	(18)	0.590	(24)
Cyprus	0.224	(19)	0.147	(26)	0.788	(11)	0.229	(19)	0.142	(26)	0.816	(9)	0.226	(21)	0.044	(27)	0.826	(10)
Latvia	0.187	(23)	0.848	(1)	0.627	(19)	0.203	(23)	0.832	(2)	0.694	(18)	0.217	(22)	0.836	(2)	0.717	(18)
Lithuania	0.335	(15)	0.641	(6)	0.695	(17)	0.333	(15)	0.629	(8)	0.775	(14)	0.340	(15)	0.649	(8)	0.760	(16)
Luxembourg	0.499	(9)	0.219	(25)	0.768	(13)	0.483	(10)	0.296	(24)	0.788	(12)	0.517	(10)	0.303	(25)	0.773	(15)
Hungary	0.236	(17)	0.413	(17)	0.584	(21)	0.242	(18)	0.441	(17)	0.604	(21)	0.268	(18)	0.459	(17)	0.595	(21)
Malta	0.185	(24)	0.068	(27)	0.379	(26)	0.177	(24)	0.087	(27)	0.410	(26)	0.171	(25)	0.088	(26)	0.413	(27)
Netherlands	0.538	(6)	0.318	(22)	0.873	(3)	0.532	(7)	0.339	(22)	0.899	(3)	0.557	(6)	0.347	(22)	0.919	(3)
Austria	0.436	(11)	0.652	(4)	0.842	(6)	0.440	(12)	0.678	(4)	0.859	(7)	0.472	(12)	0.696	(4)	0.859	(7)
Poland	0.190	(22)	0.456	(14)	0.510	(24)	0.205	(21)	0.459	(16)	0.597	(22)	0.228	(20)	0.472	(15)	0.664	(19)
Portugal	0.228	(18)	0.540	(10)	0.551	(23)	0.269	(16)	0.567	(9)	0.575	(24)	0.334	(16)	0.584	(9)	0.590	(23)
Romania	0.084	(27)	0.620	(7)	0.463	(25)	0.109	(26)	0.641	(6)	0.472	(25)	0.138	(26)	0.671	(6)	0.495	(26)

Table 3 continued

|	2006						2007						2008					
	SMGI		SUGI		INGI		SMGI		SUGI		INGI		SMGI		SUGI		INGI	
Slovenia	0.413	(13)	0.556	(9)	0.850	(5)	0.422	(13)	0.557	(10)	0.871	(4)	0.455	(13)	0.542	(10)	0.864	(6)
Slovakia	0.108	(26)	0.441	(15)	0.699	(16)	0.104	(27)	0.479	(13)	0.754	(16)	0.114	(27)	0.500	(13)	0.786	(12)
Finland	0.882	(1)	0.683	(3)	0.856	(4)	0.893	(1)	0.688	(3)	0.870	(5)	0.908	(1)	0.733	(3)	0.877	(4)
Sweden	0.826	(2)	0.847	(2)	0.897	(2)	0.827	(2)	0.862	(1)	0.932	(1)	0.858	(2)	0.872	(1)	0.929	(1)
UK	0.523	(7)	0.280	(24)	0.817	(9)	0.546	(6)	0.295	(25)	0.788	(13)	0.555	(7)	0.324	(24)	0.783	(13)
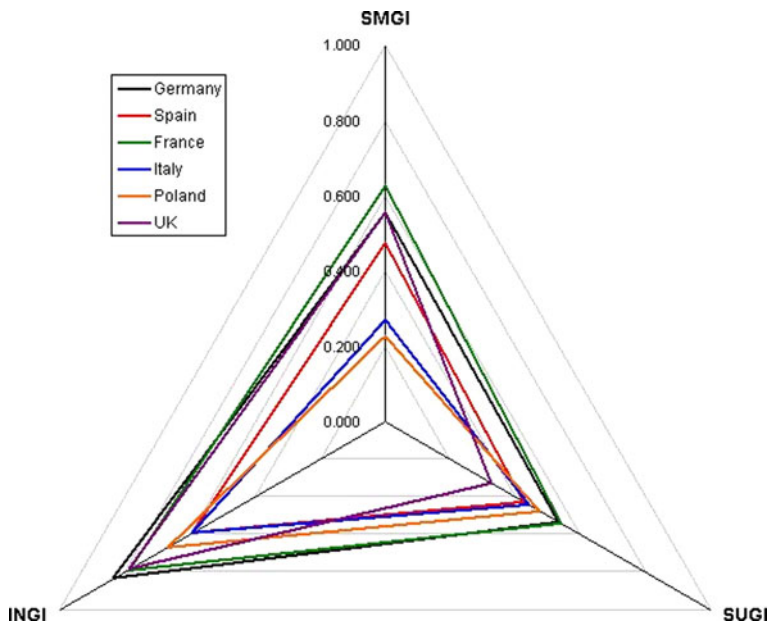
Fig. 2 Profile of the six biggest countries

include a mechanism to reward more balanced profiles of development across the three dimensions. We can actually observe some cases of very patchy profiles across these three dimensions considered in the Europe 2020 strategy. By looking at the relative rankings we can see how some countries perform very positively in one dimension, but very poorly in another. This explains why the chosen method to aggregate the three thematic indices and build the synthetic one is relevant.

Table 4 presents the scores of the synthetic index for each country in each year with the relative ranking (in brackets). It is worth underlying that all countries, with only one exception, have improved their score from 2006 to 2008, even though the 2008 performances were already influenced by the consequences of the economic and financial crisis. The effects of the crisis on the scores of this index are likely to be stronger for the following year, 2009, especially for the Inclusive Growth dimension (Table 4).

4 Internal Consistency of the Index

The Smart Growth Index (SMGI), the Sustainable Growth Index (SUGI), and the Inclusive Growth Index (INGI) concur in measuring the three dimensions of the Europe 2020 strategy. Once these three dimensions have been identified, linked to measurable indicators, and explained by three corresponding indices expressed in the same unit and scale, they can be compared and the internal coherence of the strategy be tested.

By analysing the correlations between the three indices we can measure how interlinked they are (Zhou and Ang 2009). It is important, to this purpose, to avoid any kind of endogeneity or multicollinearity, i.e. to avoid that two indices whose correlation is being assessed are built on the same indicator(s). This is the reason for the assumption made above, that each indicator is associated only to one dimension of the strategy (Table 5).

Table 4 Countries' scores in the index

	Europe 2020 Index					
	2006		2007		2008	
Belgium	0.514	(11)	0.531	(11)	0.545	(11)
Bulgaria	0.174	(26)	0.238	(26)	0.360	(23)
Czech Republic	0.431	(17)	0.444	(18)	0.465	(18)
Denmark	0.732	(3)	0.739	(3)	0.781	(3)
Germany	0.578	(8)	0.606	(6)	0.625	(6)
Estonia	0.585	(6)	0.585	(8)	0.619	(7)
Ireland	0.484	(13)	0.501	(13)	0.522	(12)
Greece	0.377	(21)	0.382	(22)	0.384	(22)
Spain	0.463	(14)	0.471	(16)	0.492	(16)
France	0.620	(5)	0.631	(5)	0.642	(5)
Italy	0.380	(20)	0.391	(20)	0.413	(21)
Cyprus	0.296	(24)	0.298	(25)	0.202	(26)
Latvia	0.463	(15)	0.490	(14)	0.507	(14)
Lithuania	0.530	(10)	0.546	(10)	0.552	(10)
Luxembourg	0.438	(16)	0.483	(15)	0.495	(15)
Hungary	0.384	(19)	0.401	(19)	0.418	(19)
Malta	0.168	(27)	0.184	(27)	0.184	(27)
Netherlands	0.531	(9)	0.546	(9)	0.562	(9)
Austria	0.621	(4)	0.635	(4)	0.656	(4)
Poland	0.353	(22)	0.383	(21)	0.415	(20)
Portugal	0.408	(18)	0.444	(17)	0.487	(17)
Romania	0.289	(25)	0.321	(24)	0.358	(24)
Slovenia	0.580	(7)	0.590	(7)	0.597	(8)
Slovakia	0.321	(23)	0.335	(23)	0.355	(25)
Finland	0.802	(2)	0.812	(2)	0.836	(2)
Sweden	0.856	(1)	0.873	(1)	0.886	(1)
UK	0.493	(12)	0.502	(12)	0.520	(13)

The OLS regressions show a positive correlation between all the three dimensions of the Europe 2020 strategy. The strongest correlation is found between the Smart Growth Index (SMGI) and the Inclusive Growth Index (INGI) with r = .641; ρ = .670; and a significance of 99.8%. This is consistent with the idea that attaining a broad participation into the labour market, reducing inequalities and exclusion is related to larger investments in R&D and in tertiary education, and that the two policies should go hand in hand. The Smart and the Inclusive dimensions of the strategy seem to be quite strictly correlated.

The fact that correlations between the thematic sub-indices are not always strong suggests that there is room for partial improvements even in the best ranking countries. Sustainable Growth is positively correlated with Inclusive Growth and with Smart Growth; these correlations, however, are not particularly strong. This might be due to the existence of some trade-offs between the environmental sustainability of one economy and the other two dimensions of the strategy, influencing the overall tendencies.

The existence and the relevance of these trade-offs depend on the model of economic development of the European countries. One of the main aims of the Europe 2020 strategy is

Table 5 Analysis of internal correlations

OLS regressions	SMGI-SUGI			SUGI-INGI			INGI-SMGI		
year	2006	2007	2008	2006	2007	2008	2006	2007	2008
R^2	0.056	0.072	0.091	0.036	0.067	0.080	0.422	0.388	0.411
Pearson	0.236	0.268	0.302	0.191	0.258	0.283	0.650	0.623	0.641
Spearman	0.090	0.100	0.137	0.209	0.268	0.307	0.725	0.648	0.670
Adjusted R^2	0.018	0.035	0.055	−0.002	0.029	0.044	0.399	0.363	0.387
Standard error	0.214	0.211	0.216	0.190	0.183	0.136	0.147	0.139	0.109
Observations	27	27	27	27	27	27	27	27	27

precisely to help changing the development models from the current to more environmentally sustainable ones, increasing competitiveness and social cohesion without increasing the environmental arm, but on the contrary reducing it and improving the sustainability of the system. This will imply overcoming those trade-offs. In this view, it is interesting to observe that the correlations between the Sustainable Growth dimension and the two others increase each year, suggesting that the development model of the 27 member states is indeed becoming more sustainable. It will be extremely interesting to observe the evolution of these correlations in the future, as a measure of the shift towards more sustainable development models.

5 External Validity of the Index

In this section the external validity of the index is tested, by analysing its relations with other main indices ranking countries according to their performance. A number of statistics are now available which try to measure different facets of society (Layard 2005; McMahon 2006; NEF 2009), and several indices can be compared to the Europe 2020 one, in an attempt to shed some light on which are the critical factors determining the success of the strategy. Those indices which include in their composition some measures which are also part of the Europe 2020 Index are excluded by this analysis, in order to avoid problems of multicollinearity.

First of all, it is important to observe that the dimension of the population of the countries is not at all correlated with the scores of the Index, meaning that the scores in the Europe 2020 Index are not dependent on the size of the country. This proofs the validity of the strategy as suitable for all twenty-seven member states of the EU, small and big ones, and probably also for the regions (Fig. 3).

The first, well known index aiming to provide a broad characterisation of development is the Human Development Index (HDI), published since 1990 by the United Nations Development Program (UNDP 1990, 2010). It is a composite index too, which accounts for different dimensions of people's well-being. It was based on the concept of development as enlarging people's opportunities, as explained by Sen (1999). The HDI had always used a linear aggregation method, until its last version, in 2010, when the geometric method has been applied. The same reasons justifying the use of the geometric aggregation in our index, were at the basis of this change in the way the HDI is constructed (Ravaillon, 2010).

Not surprisingly this index is positively and closely correlated to the Europe 2020 Index, as the regression shows ($r = .530$; $\rho = .575$; significance level: 99.8%). It must be noted, however, that the HDI includes a measure of income, as one of the three main dimensions on which it is based, and does not have any ecological consideration; this explains the differences with our index (Fig. 4).
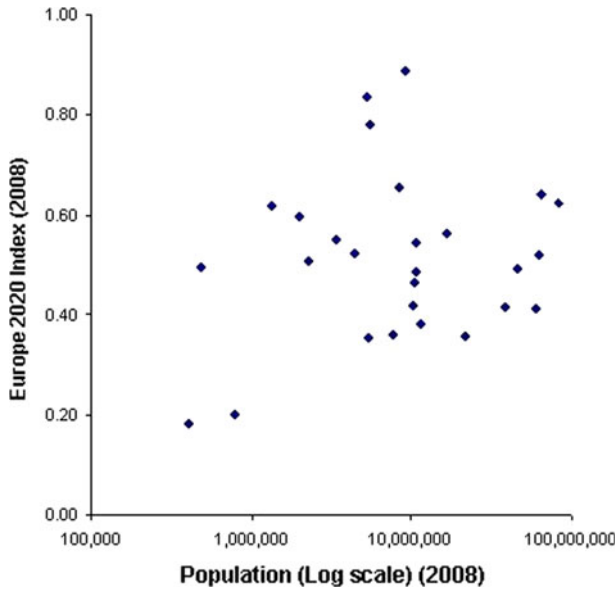
Fig. 3 Europe 2020 Index and population

Another interesting comparison to test the Europe 2020 Index is with the Index of Globalisation (Dreher 2006; Dreher et al. 2008). This composite index, based on the thematic sub-indices of economic, social and political globalisation, aims to measure the levels of globalisation of more than 190 countries.[2] The correlation between the Europe 2020 Index and each of the three dimensions of globalisation is positive but moderate, as shown below:

Correlations with Europe 2020 Index	Overall globalization index	Social globalisation index	Economic globalisation index	Political globalisation index
Pearson's	0.477	0.444	0.124	0.352
Spearman's	0.497	0.541	0.184	0.291

The level of "globalisation" as measured by this index in each one of its dimensions does not fully explain the differences in the Europe 2020 Index, probably because the twenty-seven member states of the EU constitute a quite homogeneous group of countries with very similar degrees of social, political and economic globalisation. In other words, once they share the same broad economic, political and social *aquis* as members of the EU, they do not differ much from each other in terms of openness to the rest of the world.

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[2] It defines globalization as the process of creating networks of connections among actors at multi-continental distances, mediated through a variety of flows including people, information and ideas, capital and goods. Globalization is conceptualized as a process that erodes national boundaries, integrates national economies, cultures, technologies and governance and produces complex relations of mutual interdependence. More specifically, the three dimensions of the KOF index are defined as: economic globalization, characterized as long distance flows of goods, capital and services as well as information and perceptions that accompany market exchanges; political globalization, characterized by a diffusion of government policies; and social globalization, expressed as the spread of ideas, information, images and people. It uses a linear aggregation method.
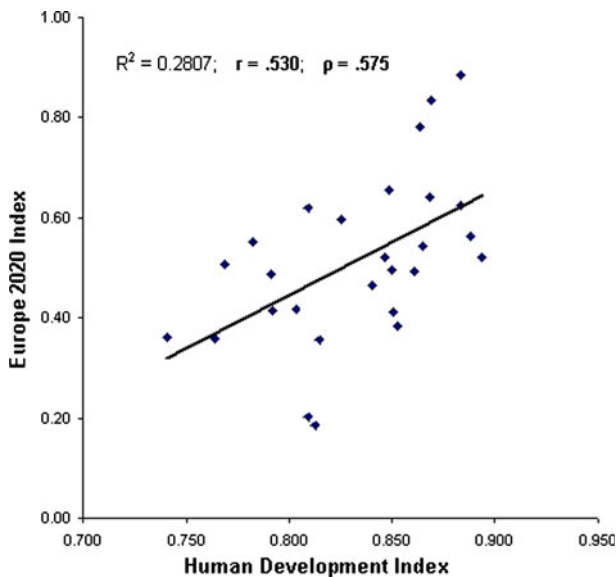
Fig. 4 Europe 2020 and human development index

The Ease of Doing Business Index is an index created by the World Bank to measure regulations directly affecting businesses, and it is based on the simple average of ten sub-indices.[3] Higher rankings indicate better, usually simpler, regulations for businesses and stronger protections of property rights. The idea behind it is that improving these regulations has a positive effect on economic growth, according to the World Bank (2009).

It actually has a positive correlation with the Europe 2020 Index ($\rho = .597$) even though it only refers to regulations having a direct effect on businesses and does not measure more general characteristics of countries. It is however interesting to observe that both indices try to measure the degree to which a country is engaged in policies (regulatory in one case, investments in the other) to support growth. It can be argued that they are complementary, even if the objectives they pursue are different.

The World Economic Forum publishes each year a Global Competitiveness Report, in which 133 economies are ranked according to a Global Competitiveness Index (GPI),[4] which tries to measure the set of institutions, policies and factors that set the

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[3] The ten sub-indices are: Starting a business (Procedures, time, cost and minimum capital to open a new business); Dealing with construction permits (Procedures, time and cost to build a warehouse); Employing workers (Difficulty of hiring index, rigidity of hours of index, difficulty of redundancy index, rigidity of employment index, redundancy costs); Registering property (Procedures, time and cost to register commercial real estate); Getting credit (Strength of legal rights index, depth of credit information index); Protecting investors (Indices on the extent of disclosure, extent of director liability and ease of shareholder suits); Paying taxes (Number of taxes paid, hours per year spent preparing tax returns and total tax payable as share of gross profit); Trading across borders (Number of documents, cost and time necessary to export and import); Enforcing contracts (Procedures, time and cost to enforce a debt contract); Closing a business (Index of recovery rate which is a function of time, cost and other factors such as lending rate and the likelihood of the company continuing to operate).

[4] The index is built on 90 variables, of which two-thirds come from the Executive Opinion Survey, and one-third comes from publicly available sources such as the United Nations. The variables are organized into nine/twelve pillars, with each pillar representing an area considered as an important determinant of competitiveness. The GCI separates countries into three specific stages: factor-driven, efficiency-driven, and
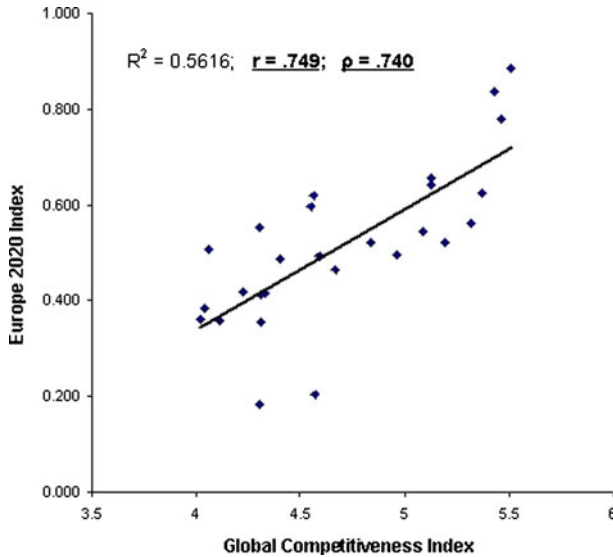
Fig. 5 Europe 2020 and global competitiveness index

sustainable current and medium-term levels of economic prosperity, in order to assess "the ability of countries to provide high levels of prosperity to their citizens. This in turn depends on how productively a country uses available resources" (Schwab et al. 2010).

The advantage of this index as a good test for the Europe 2020 Index is that it includes a very large number of indicators, classified by thematic areas (pillars), from institutions, infrastructures, education, to macroeconomic environment, health, markets functioning, technology and innovation, and aggregated with a linear method. Its comprehensiveness makes it a good benchmark for the Europe 2020 Index (Fig. 5).

The Global Competitiveness Index is strongly correlated to the Europe 2020 one ($\rho = 0.740$), this correlation has also a high degree of linearity ($r = 0.749$), and is robust (significance level $= 99.9\%$). These results suggest that the Europe 2020 strategy, as it has been presented and according to the indicators chosen for its quantification, measurement and monitoring, is perfectly consistent with the overall concept of competitiveness, as defined by the Global Competitiveness Index. The comprehensiveness of the GPI, built on more than 90 indicators, covering several facets of the economies, supports the solidity and the validity of the Europe 2020 Index.

6 Growth and Stability Pact and the Europe 2020 Strategy

In this section, the main macroeconomic indicators are analysed in relation to the Europe 2020 Index, trying to understand whether having a sound macroeconomic and fiscal profile guarantees better performance in the Europe 2020 strategy.

Footnote 4 continued
innovation-driven, each implying a growing degree of complexity in the operation of the economy. The GCI applies a linear aggregation method.
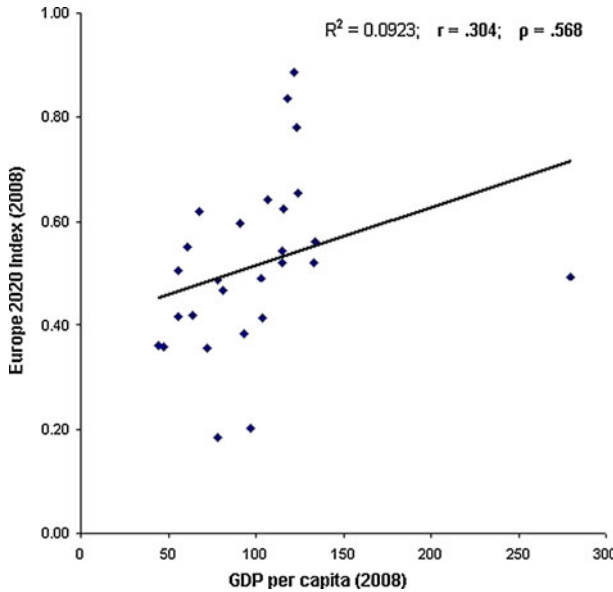
Fig. 6 Europe 2020 and GDP per capita (in PPS, EU27 average = 100)

The Europe 2020 index is positively related to good macroeconomic performance, as measured by GDP growth and sound public finances. This correlation however is not very strong. Levels of GDP, measured in purchasing power standards, compared to the average for the 27 Member States of the EU, are positively correlated to the Europe 2020 Index (Pearson's = 0.304, Spearman's = 0.568). These values tell us that there is a positive correlation, but its linearity is not so strong (Fig. 6).

The analysis of the relationship between GDP growth and levels of the Europe 2020 Index show no correlation at all. What can be more interesting, however, is comparing two measures of change, so associating GDP growth to the change in the Europe 2020 Index. This analysis is only possible for 2 years, 2007 and 2008, since, as previously explained, we are able to build the index only for 3 years, from 2006 to 2008. The Spearman's coefficients of correlation calculated for the two criteria are:

SPEARMAN's correlation	GDP growth rate in 2007	GDP growth rate in 2008
Europe 2020 Index %change in 2007	0.174	0.343
Europe 2020 Index %change in 2008	0.022	− 0.051

The Pearson's coefficients of correlation calculated for the two criteria are:

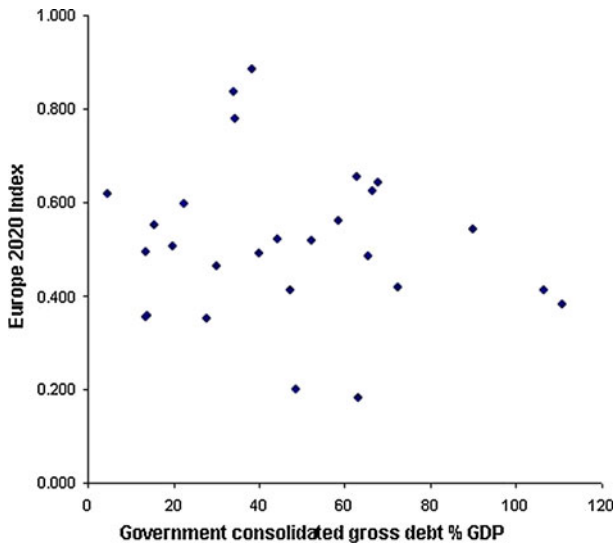| PEARSON's correlation	GDP growth rate in 2007	GDP growth rate in 2008
Europe 2020 Index %change in 2007	0.176	0.446
Europe 2020 Index %change in 2008	0.085	0.201

Fig. 7 Europe 2020 and government debt

There is no significant correlation between GDP growth and progress in the Europe 2020 Index, even though the time series available are still too short. The only medium correlation (as measured by Pearson's) observed is between the EU2020 Index "growth" in 2007 and GDP growth rate in 2008, this may suggest that progress in the Europe 2020 strategy dimensions happens on average 1 year before the same progress in economic growth. However, the time series available being too short, and the correlation being only medium, this conclusion must be taken with caution.

In the framework of the European Monetary Union, Member States agreed to avoid excessive budgetary deficits. Under the provisions of the Stability and Growth Pact, they agreed to respect two criteria: a debt-to-GDP ratio of 60%, and a deficit-to-GDP ratio of 3%. If a Member State exceeds the deficit ceiling the excessive deficit procedure (EDP) is triggered at EU level. However, when the excess of the government deficit over the 3% threshold is considered temporary, no sanction is applied.

The first measure, the level of national public debt of Member States, as measured by the general government consolidated gross debt as a percentage of GDP, is not at all correlated with the Europe 2020 strategy,[5] suggesting that keeping low debt is not necessarily conductive to good performance, in terms of the Europe 2020 strategy, and on the other side that increasing public debt, per se, do not facilitate any improvement (Fig. 7).

The measure of government deficit is a measure of the difference between the revenue and the expenditure of the general government sector. This indicator shows a positive correlation with the Europe 2020 Index.

What is interesting, however, is that across the available time series, the strongest correlation with the Europe 2020 Index in the three available years is found for the level of deficit 5, 6, and 7 years prior to the level of Europe 2020 Index. This might imply that

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[5] This is valid for all the available years, from 1995 to 2009, compared to the values of 2006, 2007 and 2008 for the Europe 2020 Index. Pearson's and Spearman's coefficients values are comprised between +0.2 and −0.2.

Table 6 Matrix of correlations public balance (1995–2009) and Europe 2020 Index (2006–2008)

Pearson	1995	1996	1997	1998	1999	2000	2001	2002
Eu2020Index 2006	−0.140	0.408	0.392	0.494	0.523	0.567	0.540	0.520
Eu2020Index 2007	−0.126	0.425	0.407	0.531	0.556	0.591	0.567	0.545
Eu2020Index 2008	−0.144	0.404	0.421	0.576	0.594	0.598	0.583	0.578

Pearson	2003	2004	2005	2006	2007	2008	2009
Eu2020Index 2006	0.523	0.423	0.471	0.497	0.495	0.437	0.317
Eu2020Index 2007	0.550	0.447	0.486	0.514	0.509	0.466	0.337
Eu2020Index 2008	0.613	0.512	0.523	0.540	0.491	0.472	0.345

having surplus, instead of a deficit, can be a pre-requisite for achieving better performances in the Europe 2020 strategy. In order to be able to make such a policy conclusion, however, we need longer time series also for the Europe 2020 Index (Table 6).

7 Institutional Factors Affecting the Europe 2020 Strategy

Good governance is often recognised as basic condition for development. Being Europe 2020 a broad strategy for development, it seems reasonable to test whether and to what extent different measures of governance available in the economic literature can explain the critical factors for such a strategy to be successful. In this section the main indicators and indices of good governance available in the literature are analysed to understand whether and to what extent they represent necessary preconditions for the Europe 2020 strategy to be successful.

The World Bank has developed the Worldwide Governance Indicators project (Kaufmann et al. 2010), aiming at synthesising different dimensions of good governance in six main indices: *Voice and accountability*, *Political stability and absence of violence or terrorism*, *Government effectiveness*, *Regulatory quality*, *Rule of law*, and *Control of corruption*.[6] They measure the quality of governance in over 200 countries, and are updated on an annual basis since 2002. The World Bank uses the unobserved components methodology (UCM) to construct the Worldwide Governance Indicators.

These are "positive" indices, meaning that higher values correspond to better performances. The coefficients of correlations (Pearson's and Spearman's) between each of these indices and the Europe 2020 Index, for the years 2006, 2007 and 2008, are presented in the following table (Table 7).

All these measures of good governance are positively correlated with the Europe 2020 Index and this is valid each year from 2006 to 2008. In some cases this correlation is extremely strong, linear and robust. *Government effectiveness* and *Control of corruption* are the two dimensions which best explain the Europe 2020 Index. The linear regressions show a strong correlation in both cases, even stronger if measured by the Spearman's coefficient,

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[6] The indicators are a compilation of the perceptions of different groups of respondents, collected in large number of surveys and cross-country assessments of governance. Some of these instruments capture the views of firms, individuals, and public officials in the countries being assessed. Others reflect the views of NGOs and aid donors with considerable experience in the countries being assessed, while others are based on the assessments of commercial risk-rating agencies.

Table 7 Matrix of correlations (Pearson's and Spearman's) between Europe 2020 Index and quality of governance indices

Indices	Year	Europe 2020 Index		
		2006	2007	2008
Voice and accountability	2006	r = 0.658; ρ = 0.648	r = 0.653; ρ = 0.661	r = 0.597; ρ = 0.639
	2007	r = 0.639; ρ = 0.649	r = 0.635; ρ = 0.657	r = 0.585; ρ = 0.644
	2008	r = 0.654; ρ = 0.652	r = 0.649; ρ = 0.655	r = 0.599; ρ = 0.644
Political stability and absence of violence or terrorism	2006	r = 0.488; ρ = 0.491	r = .501; ρ = 0.516	r = 0.479; ρ = 0.509
	2007	r = 0.430; ρ = 0.454	r = 0.445; ρ = 0.486	r = 0.422; ρ = 0.474
	2008	r = 0.328; ρ = 0.354	r = 0.343; ρ = 0.382	r = 0.321; ρ = 0.369
Government effectiveness	2006	r = 0.747; ρ = 0.722	r = 0.734; ρ = 0.715	r = .667; ρ = 0.697
	2007	r = 0.712; ρ = 0.731	r = 0.701; ρ = 0.728	r = 0.632; ρ = 0.713
	2008	r = 0.713; ρ = 0.720	r = 0.700; ρ = 0.716	r = 0.626; ρ = 0.700
Regulatory quality	2006	r = 0.575; ρ = 0.579	r = 0.566; ρ = 0.574	r = 0.510; ρ = 0.559
	2007	r = 0.594; ρ = 0.628	r = 0.587; ρ = 0.623	r = 0.534; ρ = 0.614
	2008	r = 0.598; ρ = 0.607	r = 0.589; ρ = 0.596	r = .536; ρ = 0.587
Rule of law	2006	r = 0.654; ρ = 0.700	r = 0.644; ρ = 0.698	r = 0.577; ρ = 0.689
	2007	r = 0.654, ρ = 0.704	r = 0.645; ρ = .704	r = 0.580; ρ = 0.696
	2008	r = 0.657; ρ = 0.703	r = 0.647, ρ = 0.705	r = 0.573; ρ = 0.696
Control of corruption	2006	r = 0.729, ρ = 0.716	r = 0.729; ρ = 0.717	r = 0.683, ρ = 0.697
	2007	r = 0.715; ρ = 0.681	r = 0.715; ρ = .688	r = 0.667; ρ = 0.669
	2008	r = 0.702; ρ = 0.670	r = 0.702; ρ = 0.678	r = 0.650, ρ = 0.664

a non-parametric coefficient, which is less sensitive about the outliers (in these cases Malta and Cyprus). In both cases the statistical tests of significance show a probability of type-one error below 0.1%, meaning a significance level of 99.9% for both correlations.

The first index has been built to measure perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, and to which the state mainly serves elites and private interests. The latter tries to capture the perception of the quality of public services, of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

The fact that these measures are so strictly correlated to the Europe 2020 Index is extremely interesting and very much in line with the hypothesis of good governance as the main pre-requisite for an effective implementation of the Europe 2020 strategy. This factor is often underestimated in developed countries, but these results show how it makes the difference when it comes to assessing a broad development strategy which goes beyond the simple measures of economic growth.

As a proof of how relevant good governance is, and in particular the control of corruption as decisive factor in deploying successful public policies, even in more developed countries, another well-known measure of corruption can be tested. The Corruption Perception Index (CPI), published by Transparency International (2010) each year since 1995, ranks the countries of the world according to "the degree to which corruption is perceived to exist among public officials and politicians". This index is based on a linear aggregation method of several indicators. The organization defines corruption as "the abuse of entrusted power for private gain". It gives a comprehensive picture of corruption in the countries analysed by combining a number of different indicators of corruption into one index, and is a "positive" index, i.e. a higher score means less corruption.

The analysis of correlations shows that countries with a higher Europe 2020 Index are precisely those with a higher CPI, i.e. with lower levels of corruption. Figure 8 shows this positive and very strong correlation (Pearson = .713; Spearman = .763; significance: 99.9%) of the Index with the CPI, suggesting that corruption is indeed a relevant threaten to the Europe 2020 objectives (Fig. 8).

This strong correlation between the Europe 2020 Index and the CPI is particularly important, since it substantiates the idea that good governance is at the very core of this strategy, and that EU Member State must constantly keep under control the levels of corruption, not just for the seek of ethical and moral objectives, but also for the attainment of their development objectives.
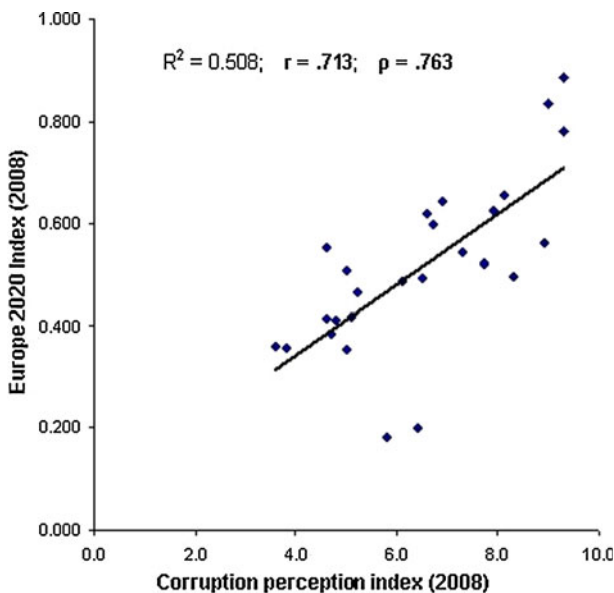

Fig. 8 Europe 2020 and corruption perception index

In the most recent economic literature on economic development the role of good governance is increasingly emphasised, as well as the notion of social capital as an important factor determining economic performance. Just like other forms of capital (physical, financial, human) it is considered a facilitator for the economic activities, contributing at both microeconomic level (with its ability to improve market functioning) and macroeconomic level (affecting the global organisation of production). To some extent, it has become a concept for defining 'the missing ingredient' in successful practice that economics cannot explain (Landabaso et al. 2007).

Most of the definitions of social capital highlight components like norms, values, voice, feelings of trust, solidarity and reciprocity, which enable better social interactions, coordination, networking and organisational capacity that in turn act as facilitators of the economic activity. It is a sociological and psychological concept having certain relevance for economic development. One of the most common proxies for social capital is a measure of generalised trust, provided by the World Value Survey indicator "most people can be trusted" (Inglehart et al. 2011). This indicator is available for the 27 member states of the EU, across different periods.

The OLS regression shows the strongest linear correlation between the Europe 2020 Index and any other measure (Pearson = .762; Spearman = .641; significance: 99.9%), as in Fig. 9. The linear regression coefficient (Pearson) is the highest found in this paper.

If we accept to use "trust", as measured by the World Value Survey, as a good proxy for social capital, this result substantiates the idea that social capital is indeed relevant for development, at least for the kind of development profile pursued by the Europe 2020 strategy in the European Union. The correlation found, as usual, does not automatically imply a causal relation between the two measures, but the fact that the measure of social capital is a weighted aggregate covering several periods (from the 1980s to 2005), and that the Europe 2020 Index values are those of 2008, may justify a prudent inference of causal relations.
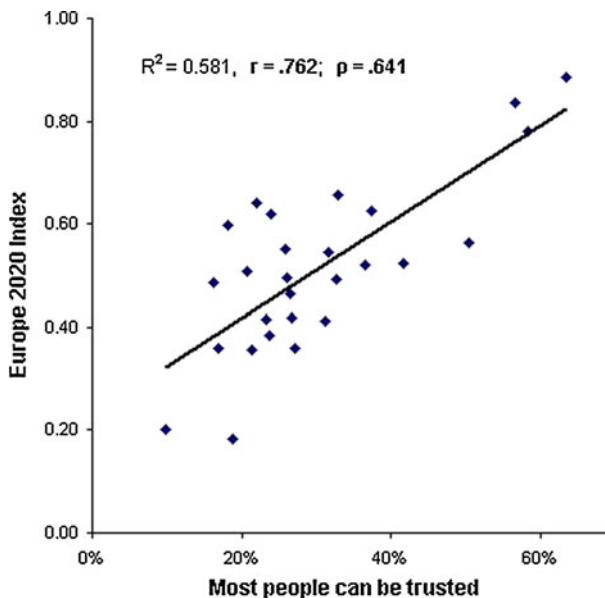

Fig. 9 Europe 2020 and social capital

8 Conclusions

In this paper I presented a new index to quantify, measure and monitor the progress towards the objectives of the Europe 2020 strategy realised by the member states of the European Union. This index can be built with the methodology shown here and relies on a set of relevant, accepted, credible, easy to monitor and robust indicators, presented by the European Commission at the time the strategy was launched.

The internal analysis of the index, on the three thematic sub-indices, shows that the Smart and the Inclusive growth dimensions of the strategy are strictly correlated and that the trade-offs between each of these two dimensions and the Sustainabile one exist but are decreasing, suggesting that a change towards more sustainable development models is occurring in Europe.

The external analysis of the index shows that it can be a valid measure to assess the overall competitiveness of countries, conceived in a broad way, as the extremely strong correlation with the Global Competitiveness Index indicates. The most critical factors for this strategy to be successful seem to be effective governance, control of corruption and social capital. The costs of corruption are often underestimated in developed countries, but these results show that they must constantly be kept under control since they are determinant for the implementation of development policies in the member states of the EU. The analysis performed in this paper also shows how relevant is the role of social capital for this strategy, substantiating what has often been argued in the recent economic literature, that it is indeed a critical factor of success for development.

Another aim of this paper is to create a basis for further research. This can be developed along two main directions, depending on the availability of data. First of all, we need longer time series for the indicators on which the index is based. At the time of drafting this paper, the last year for which all of them are available is 2008, but it will soon be 2009, and so on. It would be however very useful to go back, at least to 2003, for the indicator on "share of renewable energy in gross final energy consumption" (RNEW), which would allow the calculation of the entire index for three more years. The other direction on which further analysis could be oriented is the regional one: if we had the same indicators available at regional level, the insights we gain by using this index could be more meaningful and robust.

Appendix 1: Indicators Composing the Europe 2020 Index

Tertiary education attainment (TEDU) available for the years: 2000–2009.

The share of the population aged 30–34 years who have successfully completed university or university-like (tertiary-level) education with an education level ISCED 1997 (International Standard Classification of Education) of 5–6. This indicator measures the Europe 2020 strategy's headline target to increase the share of the 30–34 years old having completed tertiary or equivalent education to at least 40% in 2020. Data source: Eurostat.

Gross domestic expenditure on R&D (GERD) available for the years: 1990–2009.

The indicator provided is GERD (Gross domestic expenditure on R&D) as a percentage of GDP. "Research and experimental development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of this stock of knowledge to devise new applications" (Frascati Manual, 2002 edition, § 63). R&D is an activity where there

are significant transfers of resources between units, organisations and sectors and it is important to trace the flow of R&D funds. Data source: Eurostat.

Greenhouse gas emissions (GGE) available for the years: 1990–2008.

This indicator shows trends in total man-made emissions of the "Kyoto basket" of greenhouse gases presenting annual total emissions in relation to 1990 emissions The "Kyoto basket" of greenhouse gases includes: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and the so-called F-gases (hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride (SF_6)). These gases are aggregated into a single unit using gas-specific global warming potential (GWP) factors. The aggregated greenhouse gas emissions are expressed in units of CO_2 equivalents. The indicator does not include emissions and removals related to land use, land-use change and forestry (LULUCF); nor does it include emissions from international aviation and international maritime transport. CO_2 emissions from biomass with energy recovery are reported as a Memorandum item according to UNFCCC Guidelines and not included in national greenhouse gas totals. The EU as a whole is committed to achieving at least a 20% reduction of its greenhouse gas emissions by 2020 compared to 1990. This objective implies: a 21% reduction in emissions from sectors covered by the EU ETS (emission trading scheme) compared to 2005 by 2020; a reduction of 10% in emissions for sectors outside the EU ETS. To achieve this 10% overall target each Member State has agreed country-specific limits for 2020 compared to 2005 (Council Decision 2009/406/EC). Data Source: European Environment Agency.

Share of renewable energy in gross final energy consumption (RNEW) available for the years: 2006–2008.

This indicator is calculated on the basis of energy statistics covered by the Energy Statistics Regulation. It may be considered an estimate of the indicator described in Directive 2009/28/EC, as the statistical system for some renewable energy technologies is not yet fully developed to meet the requirements of this Directive. However, the contribution of these technologies is rather marginal for the time being. More information about the renewable energy shares calculation methodology and Eurostat's annual energy statistics can be found in the Renewable Energy Directive 2009/28/EC, the Energy Statistics Regulation 1099/2008 and in the transparency platform of the Directorate General for ENERGY http://ec.europa.eu/energy/renewables/index_en.htm. Data source: Eurostat.

Energy intensity of the economy (EINT) available for the years: 1990–2008.

This indicator is the ratio between the gross inland consumption of energy and the gross domestic product (GDP) for a given calendar year. It measures the energy consumption of an economy and its overall energy efficiency. The gross inland consumption of energy is calculated as the sum of the gross inland consumption of five energy types: coal, electricity, oil, natural gas and renewable energy sources. The GDP figures are taken at chain linked volumes with reference year 2000. The energy intensity ratio is determined by dividing the gross inland consumption by the GDP. Since gross inland consumption is measured in kgoe (kilogram of oil equivalent) and GDP in 1000 EUR, this ratio is measured in kgoe per 1000 EUR. Data source: Eurostat.

Employment rate of the population aged 20–64 (EMPL) available for the years: 1992–2009.

The employment rate is calculated by dividing the number of persons aged 20–64 in employment by the total population of the same age group. The indicator is based on the EU Labour Force Survey. The survey covers the entire population living in private households and excludes those in collective households such as boarding houses, halls of residence and hospitals. Employed population consists of those persons who during the

reference week did any work for pay or profit for at least 1 h, or were not working but had jobs from which they were temporarily absent. Data source: Eurostat.

Early leavers from education (SCHO) available for the years: 1992–2009.

Percentage of the population aged 18–24 with at most lower secondary education and not in further education or training. From 20 November 2009, this indicator is based on annual averages of quarterly data instead of one unique reference quarter in spring. Early leavers from education and training refers to persons aged 18–24 fulfilling the following two conditions: first, the highest level of education or training attained is ISCED 0, 1, 2 or 3c short, second, respondents declared not having received any education or training in the 4 weeks preceding the survey (numerator). The denominator consists of the total population of the same age group, excluding no answers to the questions "highest level of education or training attained" and "participation to education and training". Both the numerators and the denominators come from the EU Labour Force Survey.

Population at-risk-of-poverty or exclusion (POV) available for the years: 2003–2009.

The Europe 2020 strategy promotes social inclusion, in particular through the reduction of poverty, by aiming to lift at least 20 million people out of the risk of poverty and exclusion. This indicator summarizes number of people who are either at risk-of-poverty and/or materially deprived and/or living in households with very low work intensity. Interactions between the indicators are excluded. At risk-of-poverty are persons with an equivalised disposable income below the risk-of-poverty threshold, which is set at 60% of the national median equivalised disposable income (after social transfers). The collection "material deprivation" covers indicators relating to economic strain, durables, housing and environment of the dwelling. Severely materially deprived persons have living conditions severely constrained by a lack of resources, they experience at least four out of nine following deprivations items: cannot afford (i) to pay rent or utility bills, (ii) keep home adequately warm, (iii) face unexpected expenses, (iv) eat meat, fish or a protein equivalent every second day, (v) a week holiday away from home, (vi) a car, (vii) a washing machine, (viii) a colour TV, or (ix) a telephone. People living in households with very low work intensity are people aged 0–59 living in households where the adults work less than 20% of their total work potential during the past year. Data source: Eurostat.

Appendix 2: Reference Values

When applying (1):

$$X_{ic} = \frac{x_{ic} - \min_k \{x_{ik}\}}{\max_k \{x_{ik}\} - \min_k \{x_{ik}\}}$$

and (2):

$$X_{ic} = \frac{\max_k \{x_{ik}\} - x_{ic}}{\max_k \{x_{ik}\} - \min_k \{x_{ik}\}}$$

a choice needed to be done on which lower bound and upper bound to use. After several analyses and review of the main composed indices used in the economic literature, it seemed the most reasonable choice to select as fixed bounds the lowest and highest values across the full time series for each indicator.

This is the list of the chosen values:

$\max^{TEDU} = 49.00$ (Ireland 2009); $\min^{TEDU} = 7.40$ (Malta 2000)
$\max^{GERD} = 4.13$ (Sweden 2001); $\min^{GERD} = 0.22$ (Cyprus 1998)
$\max^{GGE} = 193.90$ (Cyprus 2008); $\min^{GGE} = 38.10$ (Latvia 2000)
$\max^{RNEW} = 44.40$ (Sweden 2008); $\min^{RNEW} = 0.10$ (Malta 2006)
$\max^{EINT} = 2306.38$ (Bulgaria 1993); $\min^{EINT} = 103.13$ (Denmark 2008)
$\max^{EMPL} = 81.10$ (Sweden 1992); $\min^{EMPL} = 51.30$ (Spain 1993)
$\max^{SCHO} = 54.40$ (Malta 2001); $\min^{SCHO} = 4.10$ (Slovenia 2007)
$\max^{POV} = 61.30$ (Bulgaria 2006); $\min^{POV} = 13.90$ (Sweden 2007)

References

Dreher, A. (2006). Does globalization affect growth? Evidence from a new index of globalization. *Applied Economics, 38*(10), 1091–1110.

Dreher, A., Gaston, N., & Martens, P. (2008). *Measuring globalisation–gauging its consequences*. New York: Springer.

Ebert, U., & Welsch, H. (2004). Meaningful environmental indices: A social choice approach. *Journal of Environmental Economics and Management, 47*, 270–283.

European Commission. (2010). *Europe 2020: A strategy for smart, sustainable and inclusive growth. COM (2010) 2020.* Brussels: European Commission.

Inglehart, R. et al. (2011). *World value survey*. Available at: http://www.worldvaluessurvey.org.

Kaufmann, D., Kraay, D., & Mastruzzi, M. (2010). *The worldwide governance indicators: Methodology and analytical issues. World Bank policy research working paper no. 5430.*

Landabaso, M., Kuklinski, A., & Román, C. (2007). *EUROPE—Reflections on social capital, innovation and regional development: The Ostuni consensus*. Warsaw: REUPUS.

Layard, R. (2005). *Happiness: Lessons from a new science*. London: Allen Lane.

McMahon, D. M. (2006). *Happiness: A history*. New York: Grove Press.

NEF (The New Economics Foundation). (2009). *Happy planet index 2.0*. London: NEF. Available at: http://www.neweconomics.org/sites/neweconomics.org/files/The_Happy_Planet_Index_2.0_1.pdf.

OECD (2008). *Handbook on constructing composite indicators: Methodology and user guide*. Paris: OECD Publishing.

Ravaillon, M. (2010). *Troubling tradeoffs in the human development index. World bank policy research working paper series.*

Saltelli, A., D'Hombres, B., Jesinghaus, J., Manca, A., Mascherini, M., Nardo, M. & Saisana, M. (2011) Indicators for EU policies. Business as usual? *Social Indicators Research*, doi: 10.1007/s11205-010-9678-4.

Schwab, K., Sala-i-Martin, X., Blanke, J., Hanouz, M. D., Mia, I. & Geiger, T. (2010). *The global competitiveness report 2009–2010*. World Economic Forum.

Sen, A. (1999). *Development as Freedom*. New York: Oxford University Press.

Stiglitz, J., Sen, A. & Fitoussi, J.-P. (2009). *Report by the commission on the measurement of economic performance and social progress*. Available at http://www.stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf.

Transparency International (2010). *Corruption perception index*. Available at: http://transparency.org/policy_research/surveys_indices/cpi/2010 .

UNDP. (1990). *Human development report 1990: Concept and measurement of human development*. New York: Oxford University Press.

UNDP. (2010). *Human development report*. New York: Palgrave Macmillan for the UNDP.

World Bank (2009). *Global monitoring report 2009: A development emergency*. (Washington, DC: WB). Available at: http://go.worldbank.org/1J2GN1XTO0.

Zhou, P., & Ang, B. W. (2009). Comparing MCDA aggregation methods in constructing composite indicators using the Shannon-Spearman measure. *Social Indicators Research, 94*, 83–96.

6. Copia completa de las publicaciones

A continuación se detallan las referencias de las diferentes revistas y libros donde se encuentran las publicaciones que conforman la tesis doctoral.

Pasimeni, P. (2011). The Europe 2020 Index. Social Indicators Research, Springer. 110(2), 613-635.

Este primer artículo fue aceptado por la revista el 3 de Octubre de 2011, publicado online el **26 de Octubre de 2011** (doi: 10.1007/s11205-011-9948-9), y finalmente publicado en papel en el Volumen 110, Número 2, de Enero de 2013.

Pasimeni P. (2012) "Measuring Europe 2020: a new tool to assess the strategy" *International Journal of Innovation and Regional Development*. **Inderscience. Vol 4, Nº 5**

Este artículo fue aceptado por la revista el 5 de Marzo de 2012, publicado online el **16 de Agosto de 2012** (doi: 10.1504/IJIRD.2012.048986), y finalmente publicado en papel en el Volumen 4, Número 5, de Septiembre de 2013.

Pasimeni, F., & Pasimeni, P. (2015). An Institutional Analysis of the Europe 2020 Strategy. *Social Indicators Research*, **Springer. 1-18.**

Este artículo fue aceptado por la revista el 18 de Junio de 2015, publicado online el **14 de Julio de 2015** (doi: 10.1007/s11205-015-1013-7), y finalmente publicado en papel en el Volumen 127, Número 3, pp 1021-1038, de Junio de 2016. (El orden de los autores es puramente alfabético, siendo yo, Paolo Pasimeni, el autor principal (*corresponding autor*). Se adjunta además el documento con el que el coautor acepta por escrito la presentación del trabajo como parte de mi tesis y renuncia a presentarlo como parte de otra tesis).

Pasimeni Paolo (2016) "Assessing the Europe 2020 Strategy", in McGowan, John, Gui, Gert, and Dallago, Bruno: "*Global Perspectives on the European Crisis***". Routledge.**

Una primera versión de este artículo fue presentada en Septiembre de 2014, en una ponencia especial (*key note speaker*) de la conferencia sobre "perspectivas globales sobre la crisis europea" en la Universidad de North Carolina, en Estados Unidos: http://europe.unc.edu/research/conferences/european-crisis/agenda/ . Fue luego aceptado para publicación en el libro el 30 de Junio de 2015. Y ha sido finalmente publicado en versión papel el **18 de Mayo de 2016**.

Measuring Europe 2020: a new tool to assess the strategy

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Abstract: This paper aims at analysing the performances of the EU member states in the Europe 2020 Strategy and understanding the main factors of success. It builds on the Europe 2020 Index developed in Pasimeni (2011) to quantify and measure progress achieved by the 27 countries in pursuing the objectives of the strategy and extends the calculation of the index to seven years. The results suggest that institutional factors are more relevant than macroeconomic indicators of public finances, such as GDP growth, levels of government debt and deficit, as success factors in the strategy. This applies to both formal institutions, such as good governance, rule of law, and control of corruption, as well as informal ones, such as social capital. This analysis has been conducted at national level; a regional breakdown of the data would enhance its validity. From a policy perspective, these findings suggest that the current emphasis on public accounts as the main criteria to define structural reforms could be enhanced including a broader focus on institutions.

Keywords: Europe 2020; measurement; institutions; governance; social capital.

Biographical notes: Paolo Pasimeni is an Economist at the European Commission, where he has been working on cohesion policy, research and innovation, employment and social affairs.

The opinions expressed in this paper are the author's alone and do not reflect those of the European Commission.

1 Introduction

The Europe 2020 strategy for smart, sustainable and inclusive growth in the European Union (EU) was launched by the European Commission (EC) in March 2010 and approved by the heads of states and governments of the 27 member states of the EU in June 2010. The new strategy is the result of a political decision intended to address the main structural challenges the EU faces and can be considered as the successor of the Lisbon strategy. It represents more a political priority than an analytical exercise, so the aim of this paper will be to understand the main factors of success in this strategy, more than to justify the choice of these priorities.

The commission's proposal for a ten-year development strategy aims at moving out of the crisis, avoiding 'the reflex to try to return to the pre-crisis situation' and changing the model of development. Three priorities were identified as main pillars of this strategy: smart growth – developing an economy based on knowledge and innovation; sustainable growth – promoting a more resource efficient, greener and more competitive economy; inclusive growth – fostering a high-employment economy delivering economic, social and territorial cohesion (European Commission, 2010).

The Europe 2020 Strategy sets out concrete targets to be achieved within the next decade in areas such as employment, education, energy use and innovation in order to overcome the impact of the financial crisis and promote economic growth. The key deliveries for the Europe 2020 Strategy at national level are the so-called 'National Reform Programmes' (NRPs), which are to be presented by the national governments in April of each year, along with the stability and convergence programmes[1]. NRPs contain national targets relating to EU-wide headline targets and explain how governments intend to meet them and overcome obstacles to growth. They also set out what measures will be taken, when, by whom and with what budget implications.

In this framework, new policy instruments for performance benchmarking (Huggins, 2010), such as composite indicators specifically developed for the Europe 2020 Strategy (Pasimeni, 2011), can be useful for the quantification, measurement, monitoring and evaluation of the strategy. The objective is to avoid some weaknesses of the Lisbon strategy, the growth strategy for the EU in the last decade (2000 to 2010), whose weaknesses have been related (Saltelli et al., 2011) to the inappropriate use of statistical indicators, not used in the context of an advocacy programme in support of the EU policy.

This paper builds on the index developed in Pasimeni (2011) to quantify, measure and monitor the progress achieved by the 27 member states of the EU towards the achievements of the objectives set by the new strategy and aims at identifying the critical factors of success for this strategy. The structure of the index is maintained, some elements of its calculation are modified, in order to ensure a better consistency over time, and the analysis is enhanced covering seven years instead of three. The index is then be used to identify the main factors which determine the differences in performances among countries. Section 2 of the paper presents the methodology used; Section 3 presents an analysis of its external validity; Section 4 applies the new tool to examine the critical factors affecting the strategy; Section 5 focuses on the role of institutions; and finally Section 6 concludes.

2   The index

The 'Europe 2020 Index', as proposed in Pasimeni (2011), is based on three thematic sub-indices representing the three dimensions of growth identified as main pillars of the strategy. These in turn are built on a set of eight indicators agreed and approved by the heads of states and governments of the 27 member states of the EU. These indicators are calculated at national level by Eurostat[2], some of them have quite long time series available, since the early nineties, but others only cover a more limited time span. This paper uses a more complete set of data, allowing the construction of the index for seven instead of three years. The eight official indicators to monitor the Europe 2020 Strategy are:

- Tertiary education attainment — (TEDU) (2000 to 2010)
- Gross domestic expenditure on R&D — (GERD) (1990 to 2009)
- Greenhouse gas emissions — (GGE) (1990 to 2009)
- Share of renewable energy in gross final energy consumption — (RNEW) (2003 to 2009)
- Energy intensity of the economy — (EINT) (1990 to 2009)
- Employment rate of the population aged 20 to 64 — (EMPL) (1992 to 2010)
- Early leavers from education — (SCHO) (1992 to 2010)
- Population at-risk-of-poverty or exclusion — (POV) (2003 to 2010)

The structure of the index is maintained, linking each indicator to only one dimension of the strategy, as in Figure 1:

Figure 1 Structure of the index
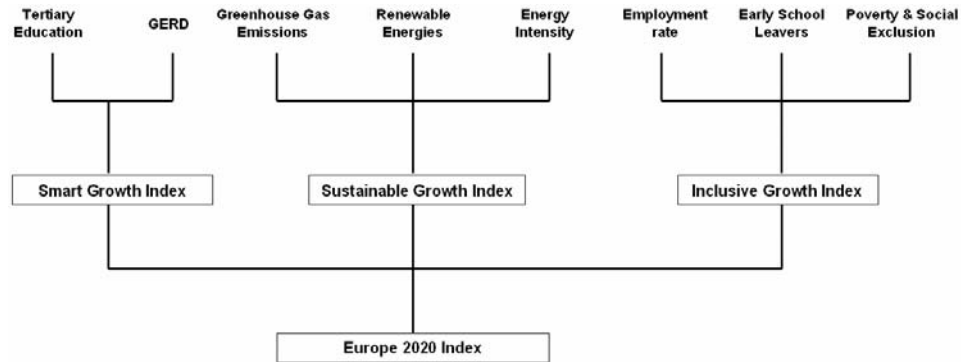
The data used are extracted by Eurostat and at the moment the largest common period for which all of them are available is from 2003 to 2009, being the shortest time series for the RNEW indicator. Table 1 provides the summary statistics for these indicators[3] showing the mean over the available time periods, the standard deviation, minimum and maximum values.

Table 1 Descriptive statistics of the indicators used

Variable	Mean	sd	Min	Max
TEDU	30.10	10.67	8.90	49.90
GERD	1.46	0.92	0.25	3.92
GGE	96.06	32.84	40.00	193.00
RNEW	11.09	9.90	0.10	47.30
EINT	310.96	227.08	104.69	1,207.91
EMPL	68.05	6.14	50.80	81.10
SCHO	17.21	10.40	4.10	54.40
POV	25.29	10.11	13.90	64.50

The normalisation method for the eight indicators remains the same, by applying:

$$X_{ic} = \frac{x_{ic} - \min_k \{x_{ik}\}}{\max_k \{x_{ik}\} - \min_k \{x_{ik}\}} \qquad \text{and} \qquad X_{ic} = \frac{\max_k \{x_{ik}\} - x_{ic}}{\max_k \{x_{ik}\} - \min_k \{x_{ik}\}},$$

where i is the indicator, c the country, and $\max_k$ and $\min_k$ are the maximum and minimum values of that indicator across the whole period available. These values, however, are different from the previous version of the index: the choice has been made to used absolute higher and lower bounds among the data available for all the countries, even non-EU, across the full time series.

The comparability over time of the index, across many years, will be easier and more 'sustainable', reducing the probability that some value for EU countries reaches the absolute historical maximum or minimum. Table 2 shows the summary statistics for the normalised values, presenting the mean over the available time periods, the standard deviation, minimum and maximum values:

Table 2   Descriptive statistics of the normalised indicators

Variable	Mean	sd	Min	Max
TEDU	0.53	0.25	0.035	1.000
GERD	0.32	0.24	0.008	0.946
GGE	0.65	0.20	0.062	0.988
RNEW	0.17	0.15	0.001	0.728
EINT	0.90	0.10	0.495	0.992
EMPL	0.60	0.13	0.308	0.853
SCHO	0.79	0.17	0.089	0.992
POV	0.77	0.17	0.130	0.962

Three thematic indices can be created by grouping these indicators, reflecting the three main pillars of the Europe 2020 strategy: the smart growth index (SMGI), the sustainable growth index (SUGI), and the inclusive growth index (INGI), which in turn form the Europe 2020 Index. The normalised indicators are aggregated with a geometric mean using equal weights (Ebert and Welsch, 2004; OECD, 2008), as in Pasimeni (2011), to build the three thematic indices and the final one. Tables 3, 4 and 5 present the values and the rankings of the 27 member states in each of the new thematic indices for each year, from 2003 to 2009:

Table 6 presents the scores of the new Europe 2020 Index for each country in each year with the relative ranking. It is worth underlying that all countries have improved their score from 2003 to 2009, even though the 2009 performances were already influenced by the consequences of the economic and financial crisis. The effects of the crisis on the dimensions of this index are likely to be stronger for the following year, 2010, especially for the Inclusive Growth dimension.

Table 3   Values and rankings in the SMGI

	2003	2004	2005	2006	2007	2008	2009
Belgium	0.549 5	0.566 5	0.554 5	0.579 5	0.585 5	0.611 5	0.614 6
Bulgaria	0.159 21	0.170 22	0.159 23	0.161 25	0.160 25	0.172 24	0.196 23
Czech Rep	0.175 19	0.177 19	0.195 20	0.209 20	0.212 20	0.239 19	0.277 18
Denmark	0.661 3	0.680 3	0.694 3	0.696 3	0.706 3	0.776 3	0.834 3
Germany	0.497 7	0.516 7	0.506 7	0.508 8	0.515 8	0.549 8	0.587 7
Estonia	0.259 14	0.275 14	0.315 14	0.371 14	0.366 14	0.413 14	0.456 14
Ireland	0.396 9	0.433 10	0.442 10	0.456 10	0.479 9	0.535 9	0.617 5
Greece	0.180 18	0.186 18	0.202 18	0.207 21	0.207 21	0.201 23	0.206 22
Spain	0.364 11	0.380 12	0.411 12	0.425 12	0.450 11	0.469 11	0.475 13
France	0.567 4	0.574 4	0.587 4	0.606 4	0.617 4	0.622 4	0.663 4
Italy	0.186 17	0.207 17	0.224 16	0.237 16	0.253 17	0.265 18	0.269 19
Cyprus	0.159 20	0.174 20	0.195 19	0.221 19	0.227 19	0.224 21	0.246 21
Latvia	0.102 24	0.116 25	0.151 25	0.185 24	0.204 22	0.217 22	0.181 24
Lithuania	0.220 15	0.275 15	0.312 15	0.331 15	0.330 15	0.334 15	0.349 15
Luxembourg	0.292 13	0.451 9	0.493 9	0.493 9	0.478 10	0.513 10	0.583 8
Hungary	0.196 16	0.210 16	0.213 17	0.235 17	0.241 18	0.265 17	0.307 17
Malta	0.034 27	0.138 24	0.152 24	0.185 23	0.175 24	0.166 25	0.162 25
Netherlands	0.499 6	0.519 6	0.527 6	0.533 6	0.527 7	0.553 6	0.565 10
Austria	0.388 10	0.407 11	0.420 11	0.429 11	0.435 12	0.467 12	0.492 11
Poland	0.137 23	0.163 23	0.180 22	0.188 22	0.203 23	0.226 20	0.265 20
Portugal	0.149 22	0.170 21	0.186 21	0.226 18	0.266 16	0.331 16	0.342 16
Romania	0.039 26	0.054 27	0.068 27	0.083 27	0.108 26	0.136 26	0.119 27
Slovenia	0.320 12	0.353 13	0.355 13	0.409 13	0.418 13	0.450 13	0.489 12
Slovakia	0.093 25	0.098 26	0.110 26	0.107 26	0.103 27	0.112 27	0.126 26
Finland	0.815 1	0.837 1	0.844 1	0.872 1	0.883 1	0.896 1	0.926 1
Sweden	0.713 2	0.732 2	0.779 2	0.818 2	0.802 2	0.851 2	0.863 2
UK	0.471 8	0.480 8	0.497 8	0.518 7	0.540 6	0.552 7	0.580 9

Table 4   Values and rankings in the SUGI

	2003	2004	2005	2006	2007	2008	2009
Belgium	0.250 22	0.258 22	0.275 22	0.291 21	0.305 22	0.314 22	0.359 21
Bulgaria	0.314 18	0.331 15	0.343 16	0.410 13	0.412 14	0.429 14	0.474 14
Czech Rep	0.306 19	0.324 19	0.331 18	0.388 16	0.410 15	0.421 15	0.441 18
Denmark	0.489 5	0.523 5	0.548 4	0.530 8	0.559 7	0.573 7	0.592 8
Germany	0.345 13	0.364 13	0.381 12	0.427 12	0.472 11	0.470 12	0.485 12
Estonia	0.479 6	0.481 6	0.489 7	0.572 5	0.572 5	0.595 5	0.641 5
Ireland	0.220 25	0.232 25	0.255 24	0.276 23	0.289 23	0.300 23	0.343 22
Greece	0.326 16	0.324 17	0.323 19	0.368 18	0.380 18	0.385 20	0.398 20
Spain	0.331 15	0.313 20	0.298 21	0.353 20	0.351 20	0.391 19	0.443 15
France	0.388 11	0.389 11	0.384 11	0.451 11	0.464 12	0.478 11	0.496 11

Table 4   Values and rankings in the SUGI (continued)

	2003	2004	2005	2006	2007	2008	2009
Italy	0.365 12	0.382 12	0.377 13	0.361 19	0.362 19	0.397 18	0.443 16
Cyprus	0.165 26	0.165 26	0.151 26	0.160 26	0.162 26	0.153 26	0.215 26
Latvia	0.735 1	0.753 1	0.756 1	0.742 2	0.731 2	0.734 2	0.771 2
Lithuania	0.450 8	0.454 8	0.472 8	0.563 6	0.553 8	0.572 8	0.595 7
Luxembourg	0.238 23	0.238 24	0.236 25	0.229 25	0.285 24	0.290 25	0.298 25
Hungary	0.315 17	0.324 18	0.344 15	0.368 17	0.389 17	0.405 17	0.433 19
Malta	0.070 27	0.071 27	0.070 27	0.070 27	0.079 27	0.080 27	0.083 27
Netherlands	0.281 21	0.291 21	0.313 20	0.291 22	0.309 21	0.319 21	0.340 23
Austria	0.534 3	0.547 4	0.543 5	0.585 4	0.609 4	0.616 4	0.649 4
Poland	0.344 14	0.349 14	0.352 14	0.397 15	0.400 16	0.419 16	0.442 17
Portugal	0.460 7	0.430 10	0.407 10	0.496 9	0.518 9	0.530 9	0.552 9
Romania	0.438 9	0.469 7	0.489 6	0.544 7	0.564 6	0.591 6	0.626 6
Slovenia	0.438 10	0.452 9	0.437 9	0.496 10	0.498 10	0.484 10	0.523 10
Slovakia	0.304 20	0.325 16	0.340 17	0.397 14	0.435 13	0.440 13	0.482 13
Finland	0.529 4	0.560 3	0.597 3	0.611 3	0.615 3	0.652 3	0.662 3
Sweden	0.619 2	0.625 2	0.664 2	0.750 1	0.764 1	0.776 1	0.802 1
UK	0.234 24	0.248 23	0.261 23	0.249 24	0.267 25	0.292 24	0.323 24

Table 5   Values and rankings in the INGI

	2003	2004	2005	2006	2007	2008	2009
Belgium	0.677 15	0.698 15	0.706 15	0.714 15	0.729 17	0.737 17	0.735 14
Bulgaria	0.302 26	0.330 27	0.358 27	0.393 27	0.441 27	0.606 23	0.581 24
Czech Rep	0.793 7	0.794 7	0.803 7	0.822 6	0.840 5	0.844 4	0.837 5
Denmark	0.852 2	0.867 1	0.867 2	0.879 1	0.854 2	0.870 2	0.851 3
Germany	0.746 12	0.753 9	0.758 10	0.764 12	0.785 10	0.798 9	0.805 8
Estonia	0.721 14	0.722 14	0.738 13	0.792 9	0.795 8	0.800 8	0.731 15
Ireland	0.738 13	0.744 12	0.756 11	0.774 10	0.782 11	0.767 13	0.703 17
Greece	0.610 19	0.630 18	0.651 18	0.651 18	0.668 19	0.669 20	0.667 19
Spain	0.549 22	0.551 22	0.586 22	0.602 22	0.607 23	0.591 24	0.555 25
France	0.754 9	0.752 10	0.758 9	0.756 13	0.759 15	0.772 12	0.760 13
Italy	0.561 21	0.582 21	0.591 21	0.605 21	0.613 22	0.619 22	0.610 23
Cyprus	0.754 10	0.725 13	0.733 14	0.766 11	0.790 9	0.796 10	0.802 9
Latvia	0.570 20	0.601 20	0.594 20	0.651 19	0.699 18	0.713 18	0.629 20
Lithuania	0.640 17	0.657 16	0.664 17	0.707 17	0.767 13	0.765 14	0.702 18
Luxembourg	0.749 11	0.751 11	0.755 12	0.756 14	0.773 12	0.761 15	0.800 10
Hungary	0.620 18	0.616 19	0.616 19	0.624 20	0.640 21	0.636 21	0.615 21
Malta	0.292 27	0.410 26	0.441 26	0.431 26	0.455 26	0.463 27	0.470 27
Netherlands	0.803 5	0.804 5	0.814 4	0.833 3	0.854 3	0.869 3	0.870 1

Table 5   Values and rankings in the INGI (continued)

	2003	2004	2005	2006	2007	2008	2009
Austria	0.818 3	0.795 6	0.810 6	0.815 7	0.826 7	0.826 7	0.839 4
Poland	0.454 25	0.490 25	0.526 25	0.583 23	0.644 20	0.692 19	0.704 16
Portugal	0.511 24	0.527 24	0.538 24	0.541 25	0.565 24	0.580 25	0.611 22
Romania	0.548 23	0.542 23	0.539 23	0.548 24	0.535 25	0.553 26	0.548 26
Slovenia	0.797 6	0.821 3	0.819 3	0.826 4	0.844 4	0.837 6	0.832 6
Slovakia	0.674 16	0.655 17	0.671 16	0.713 16	0.755 16	0.779 11	0.764 11
Finland	0.806 4	0.807 4	0.813 5	0.825 5	0.836 6	0.840 5	0.821 7
Sweden	0.869 1	0.860 2	0.869 1	0.850 2	0.878 1	0.876 1	0.863 2
UK	0.774 8	0.781 8	0.785 8	0.793 8	0.764 14	0.759 16	0.763 12

Table 6   Values and rankings in the Europe 2020 index

	2003	2004	2005	2006	2007	2008	2009
Belgium	0.453 9	0.467 9	0.476 10	0.494 11	0.507 11	0.521 11	0.545 10
Bulgaria	0.247 25	0.265 25	0.269 25	0.296 25	0.308 25	0.355 23	0.378 23
Czech Rep	0.349 17	0.357 18	0.373 17	0.405 17	0.418 18	0.440 18	0.467 17
Denmark	0.651 3	0.676 3	0.691 3	0.687 3	0.696 3	0.728 3	0.749 3
Germany	0.504 6	0.521 6	0.527 6	0.550 8	0.576 6	0.591 6	0.612 6
Estonia	0.447 10	0.457 10	0.484 9	0.552 6	0.550 8	0.581 7	0.598 7
Ireland	0.401 13	0.421 14	0.440 14	0.460 13	0.477 13	0.498 12	0.530 11
Greece	0.330 20	0.337 21	0.349 20	0.367 21	0.375 21	0.373 22	0.380 22
Spain	0.405 12	0.403 15	0.415 15	0.449 14	0.458 16	0.477 16	0.489 15
France	0.549 5	0.551 5	0.555 5	0.591 4	0.601 5	0.612 5	0.630 5
Italy	0.336 19	0.359 17	0.368 18	0.373 20	0.383 20	0.402 21	0.417 21
Cyprus	0.271 23	0.275 24	0.279 24	0.300 24	0.308 26	0.301 26	0.349 25
Latvia	0.350 16	0.374 16	0.408 16	0.447 15	0.471 15	0.484 14	0.445 18
Lithuania	0.398 14	0.434 12	0.461 12	0.509 9	0.519 9	0.527 10	0.526 12
Luxembourg	0.373 15	0.432 13	0.445 13	0.440 16	0.472 14	0.483 15	0.518 14
Hungary	0.337 18	0.347 19	0.356 19	0.378 19	0.391 19	0.409 19	0.434 20
Malta	0.089 27	0.159 27	0.168 27	0.177 27	0.184 27	0.183 27	0.185 27
Netherlands	0.483 7	0.496 8	0.512 7	0.505 10	0.518 10	0.535 9	0.551 9
Austria	0.553 4	0.561 4	0.570 4	0.589 5	0.602 4	0.620 4	0.645 4
Poland	0.278 22	0.303 22	0.321 22	0.352 22	0.374 22	0.403 20	0.435 19
Portugal	0.327 21	0.338 20	0.344 21	0.393 18	0.427 17	0.467 17	0.487 16
Romania	0.211 26	0.240 26	0.261 26	0.291 26	0.320 24	0.355 24	0.344 26
Slovenia	0.482 8	0.508 7	0.503 8	0.551 7	0.560 7	0.567 8	0.597 8
Slovakia	0.267 24	0.275 23	0.292 23	0.312 23	0.324 23	0.338 25	0.360 24
Finland	0.703 2	0.723 2	0.743 2	0.761 2	0.769 2	0.789 2	0.795 2
Sweden	0.727 1	0.733 1	0.766 1	0.805 1	0.813 1	0.833 1	0.842 1
UK	0.440 11	0.453 11	0.467 11	0.468 12	0.479 12	0.497 13	0.523 13

Sweden, Finland and Denmark are, in this order, the top performing countries each year. The biggest improvements in the ranking of the 27 member states between 2003 and 2009 were those of Portugal (from the 21st to the 16th position), Poland (from 22nd to 19th), and Estonia (from 10th to 7th). In most of the cases we observe an increase in absolute values of the index for each country, only in very few cases the performance lowers. The two most significant cases of reduction in the value of the index are observed for Romania and Latvia in the year 2009 compared to 2008: the first sees a reduction of 0.011 points, the second, even bigger, of 0.039 points.

This might be an expected result, due to the effects of the crisis on the policies put in place, and by taking a closer look at the three components of the strategy, we can disaggregate this effect. In both cases the decrease is explained by the strong deterioration of their performances in the inclusive dimension (INGI) and in the smart growth one (SMGI), while at the same time their sustainable growth index (SUGI) was still improving.

This index offers an opportunity to perform quantitative assessments of the Europe 2020 Strategy, and might be used to explore which factors are more decisive for its improvement. The next section compares this measure with the other main indices available in the literature, analysing different facets of development. We then study the correlation between this measure of the strategy and the main indicators of economic development or the main institutional dimensions of good governance, to assess their relative relevance.

3   External validity of the index

In this section the index is compared to other selected indices available in the literature, which rank countries according to their performance in a certain dimension. In particular the section extends the analysis of globalisation and competitiveness in relation to the Europe 2020 Strategy, in order to understand to what extent these are positive factors for the strategy, and how this relation evolves over time.

The KOF index of globalisation (Dreher, 2006; Dreher et al., 2008) is a composite index, based on the thematic sub-indices of economic, social and political globalisation, which aims to measure the levels of globalisation of more than 190 countries.[4] The data available for this composite index only cover the period until 2008, and we can observe that the correlation between the Europe 2020 Index and each of the three dimensions of globalisation is positive, but moderate.

What is extremely relevant in this comparison is that the correlation between the Europe 2020 performance, as measured by the index, and the level of globalisation, as measured by the KOF one, is clearly decreasing every year. This holds true for each one of the specific sub-indices composing the globalisation index, as shown in Figure 2:

**Figure 2** Evolution of correlations between Europe 2020 Index and globalisation indices (same years)
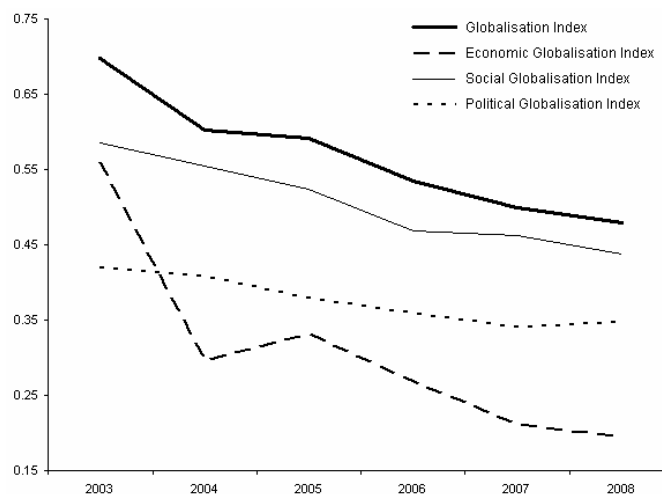
The graph shows that while in 2003 the two performances were highly correlated (r = .697; ρ = .769), implying that more 'globalised' member states clearly had better performance in those dimensions which now form the Europe 2020 Strategy, this is less and less valid in 2008 (r = .479; ρ = .527). The explanation for this clear tendency might be that even though the 27 member states of the EU constitute a quite homogeneous group of countries with very similar degrees of social, political and economic globalisation, for those which joined the EU only in 2004 (and 2007) this might have been taken some time.

The declining relevance of the differences in the degree of openness (as measured by the globalisation index) could reflect the process of integration within the EU. In other words, once the 27 member states share the same broad economic, political and social *aquis* as members of the EU, they do not differ much from each other in terms of openness to the rest of the world. It will be interesting to see if this tendency continues over the following years.

The World Economic Forum publishes each year a Global Competitiveness Report, in which 133 economies are ranked according to a global competitiveness index (GPI)[5], which tries to measure the set of institutions, policies and factors that set the sustainable current and medium-term levels of economic prosperity, in order to assess "the ability of countries to provide high levels of prosperity to their citizens. This in turn depends on how productively a country uses available resources" (Schwab et al., 2010).

The advantage of this index as a good test for the Europe 2020 Index is that it includes a very large number of indicators, classified by thematic areas (pillars), from institutions, infrastructures, education, to macroeconomic environment, health, markets functioning, technology and innovation, and aggregated with a linear method. Its comprehensiveness makes it a good benchmark for the Europe 2020 Index.

Figure 3   Europe 2020 and global competitiveness index (see online version for colours)
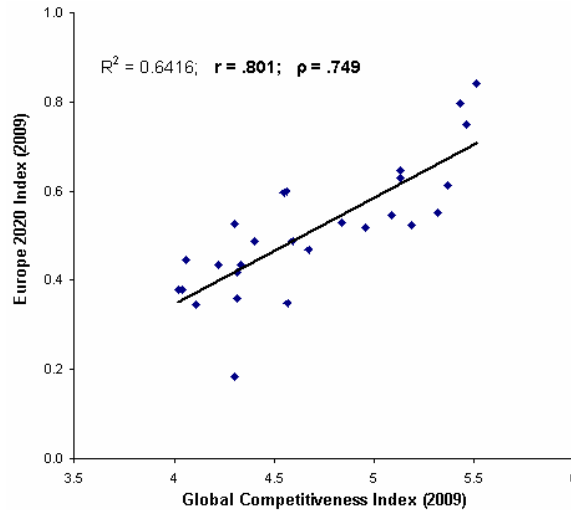
The global competitiveness index is strongly correlated with the Europe 2020 one (ρ = .749), this correlation also has a very high degree of linearity (r = .801), and is robust (significance level = 99.9%). These results suggest that the Europe 2020 strategy, as it has been presented and according to the indicators chosen for its quantification, measurement and monitoring, is perfectly consistent with the overall concept of competitiveness, as defined by the global competitiveness index, and that competitiveness is one of the key factors of success in the strategy.

4   Critical factors affecting the Europe 2020 Strategy

This section tries to identify those factors which are more decisive for the Europe 2020 Strategy, factors that can explain the differences in performances of the member states, as measured by the Europe 2020 Index. In order to do this, the main macroeconomic indicators together with other institutional factors relevant for development, proposed in the literature, are compared to the index.

The main macroeconomic indicators of the public accounts are analysed to understand how relevant they are for the performance of the member states in the Europe 2020 Strategy. The analysis performed here will try to shed some light on whether having a sound macroeconomic and fiscal profile guarantees better performance in the Europe 2020 Strategy.

The Europe 2020 Index is positively related to good economic performance, as measured by GDP per capita. This correlation however is not very strong. Levels of GDP, measured in purchasing power standards, compared to the average for the 27 member states of the EU, are positively correlated to the Europe 2020 Index (Pearson's = .352, Spearman's = .598). These values tell us that there is a positive correlation, but its linearity is not so strong. The analysis of the relationship between GDP growth and levels of the Europe 2020 Index show no correlation at all (r = −.168; ρ = −.252) and this is valid across the whole time series.

In the framework of the European Monetary Union, member states agreed to avoid excessive budgetary deficits. Under the provisions of the Stability and Growth Pact, they agreed to respect two criteria: a debt-to-GDP ratio of 60%, and a deficit-to-GDP ratio of 3%. If a country exceeds the deficit ceiling the excessive deficit procedure (EDP) is triggered at EU level. However, when the excess of the government deficit over the 3% threshold is considered temporary, no sanction is applied.

The first measure, the level of national public debt of member states, as measured by the general government consolidated gross debt as a percentage of GDP, is not at all correlated with the Europe 2020 strategy, and this is valid for all the available years, from 1995 to 2010, compared to all the values of the Europe 2020 Index for the years from 2003 to 2009. Pearson's and Spearman's coefficients values are comprised between +0.150 and –0.150. This suggests that keeping low debt is not necessarily conductive to good performance, in terms of the Europe 2020 strategy, and on the other side that increasing public debt, per se, does not facilitate any improvement.

Figure 4 Europe 2020 and government debt (see online version for colours)
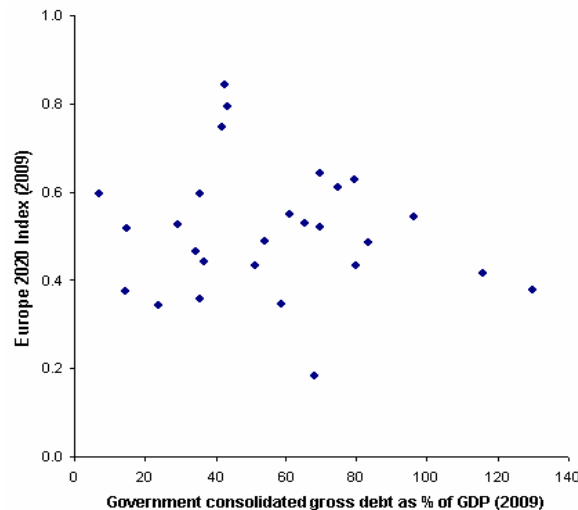
The measure of government deficit is a measure of the difference between the revenue and the expenditure of the general government sector. This indicator shows a positive correlation with the Europe 2020 Index (r = .379; ρ = .384), which is, however, very limited.

Other factors, however, could better explain the differences in performances of the member states in the Europe 2020 Strategy, as measured by our index. Institutions, in the sense of "humanly devised constraints that structure political, economic and social interactions" (North, 1991), are often recognised as important conditions for development. This applies to both formal and informal institutional settings. Being Europe 2020 a broad strategy for development, it seems reasonable to test whether and to what extent different measures of governance available in the economic literature can explain the critical factors for such a strategy to be successful.

In this section the main indicators and indices of good governance available in the literature, as measures of formal institution, are analysed to understand whether and to

what extent they represent necessary preconditions for the Europe 2020 Strategy to be successful. Then the role of social capital, as example of informal institutions, is also analysed.

The World Bank has developed the Worldwide Governance Indicators project (Kaufmann et al., 2010), aiming at synthesising different dimensions of good governance in six main indices: *Voice and accountability*, *Political stability and absence of violence or terrorism*, *Government effectiveness*, *Regulatory quality*, *Rule of law*, and *Control of corruption*.[6] They measure the quality of governance in over 200 countries, and are updated on an annual basis since 2002. These are 'positive' indices, meaning that higher values correspond to better performances. The coefficients of correlations (Pearson's and Spearman's) between each of these indices and the Europe 2020 Index, in each year from 2003 to 2009, are presented in Table 7:

Table 7   Matrix of correlations (Pearson's and Spearman's) between Europe 2020 index and quality of governance indices

Indices	*Europe 2020 index*						
	2003	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*
Voice and accountability	r =.613	r =.705	r =.688	r =.631	r =.618	r =.610	r =.653
	ρ=.647	ρ=.696	ρ=.675	ρ=.624	ρ=.654	ρ=.641	ρ=.711
Political stability, absence of violence	r =.308	r =.547	r =.472	r =.478	r =.429	r =.313	r =.412
	ρ=.342	ρ=.534	ρ=.468	ρ=.482	ρ=.491	ρ=.369	ρ=.458
Government effectiveness	r =.761	r =.799	r =.762	r =.721	r =.687	r =.655	r =.735
	ρ=.806	ρ=.755	ρ=.755	ρ=.708	ρ=.720	ρ=.700	ρ=.761
Regulatory quality	r =.652	r =.665	r =.633	r =.546	r =.572	r =.557	r =.611
	ρ=.710	ρ=.678	ρ=.645	ρ=.565	ρ=.618	ρ=.587	ρ=.632
Rule of law	r =.648	r =.722	r =.689	r =.622	r =.623	r =.590	r =.641
	ρ=.716	ρ=.750	ρ=.731	ρ=.684	ρ=.699	ρ=.696	ρ=.724
Control of corruption	r =.759	r =.801	r =.777	r =.721	r =.708	r =.677	r =.747
	ρ=.788	ρ=.806	ρ=.794	ρ=.700	ρ=.676	ρ=.664	ρ=.798

All these measures of good governance are positively correlated with the Europe 2020 Index and this is valid each year from 2003 to 2009. We can observe in the following figure how important these factors are, and how this relevance is also increasing, in particular in the last year (2009) for which we are able to build our index.

In some cases this correlation is extremely strong, linear and robust. *Government effectiveness*, *Control of corruption* and *Rule of Law* are the dimensions which best explain the Europe 2020 Index, much better than the public accounts indicators. The linear regressions show a strong correlation in both cases, even stronger if measured by the Spearman's coefficient, a non-parametric coefficient, which is less sensitive about the outliers (in these cases Malta and Cyprus). In all three cases the statistical tests of significance show a probability of type-one error below 0.1%, meaning a significance level of 99.9% for these correlations.

Figure 5 Evolution of correlations Europe 2020 Index/WB governance indicators (same years)
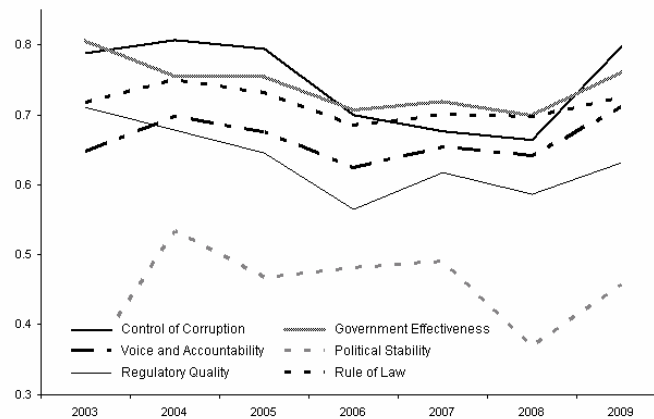
The first indicator has been built to measure perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, and to which the state mainly serves elites and private interests. The *Control of Corruption* one tries to capture the perception of the quality of public services, of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. The latter captures perceptions of the extent to which people have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.

The strict correlation between these measures and the Europe 2020 Index is extremely interesting and very much in line with the hypothesis of good governance as the main pre-requisite for an effective implementation of the Europe 2020 strategy. This factor is often underestimated in developed countries, but these results show how it makes the difference when it comes to assessing a broad development strategy which goes beyond the simple measures of economic growth.

Another well-known measure of corruption can be tested in order to corroborate how relevant good governance is, and in particular the control of corruption, as a decisive factor in deploying successful public policies even in more developed countries. The *Corruption Perception Index* (CPI), published by Transparency International (2010) each year since 1995, ranks the countries of the world according to "the degree to which corruption is perceived to exist among public officials and politicians". This index is based on a linear aggregation method of several indicators. The organisation defines corruption as "the abuse of entrusted power for private gain". It gives a comprehensive picture of corruption in the countries analysed by combining a number of different indicators of corruption into one index, and is a 'positive' index, i.e., a higher score means less corruption.

Figure 6   Control of corruption and government effectiveness' correlations with Europe 2020
(see online version for colours)
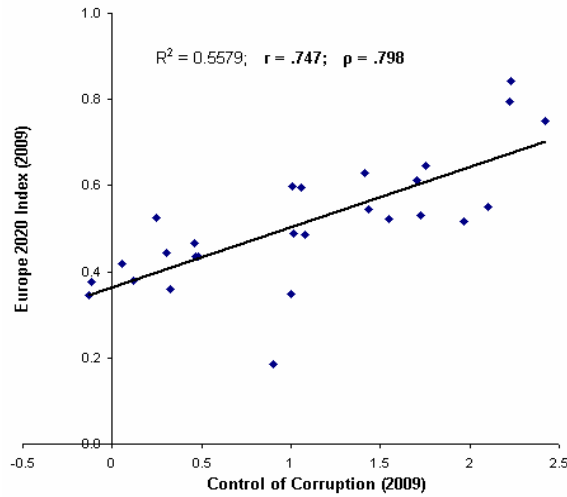
(a)
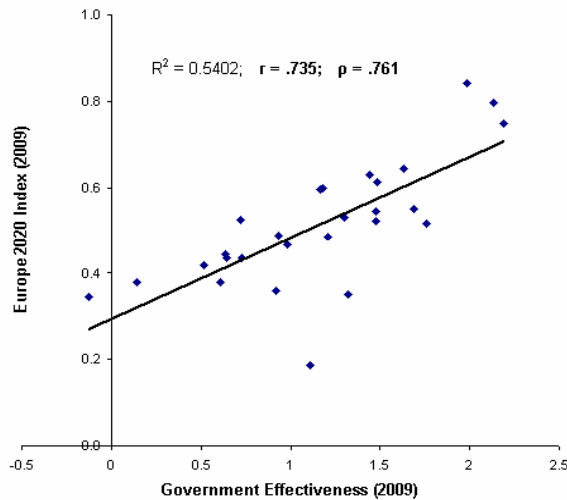
(b)

The analysis of correlations shows that countries with a higher Europe 2020 Index are precisely those with a higher CPI, i.e., with lower levels of corruption. Figure 7 shows this positive and very strong correlation (Pearson = .782; Spearman = .840; significance: 99.9%) of the index with the CPI, suggesting that levels of corruption in a country is a good predictor of the capacity of this country to achieve the Europe 2020 objectives and is indeed a relevant threaten to the strategy.

Figure 7 Europe 2020 and CPI (see online version for colours)
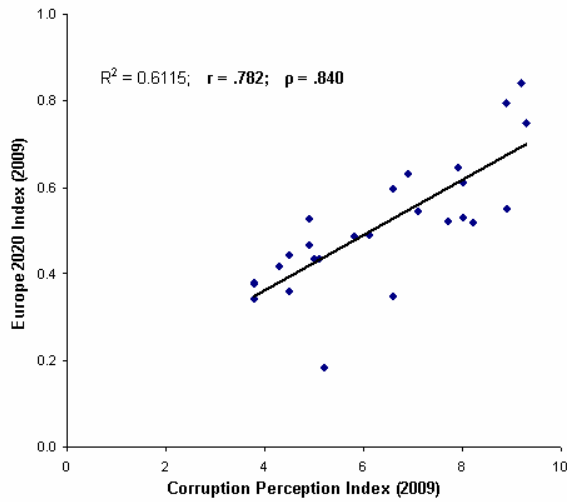
It had already been demonstrated that levels of corruption are negatively correlated with levels of investments and expenditures on education (Mauro, 1995) and that corruption opportunities may be less abundant on education than on other components of government expenditure (Shleifer and Vishny, 1993), but this strong correlation between the Europe 2020 Index and the CPI is particularly important, since it substantiates the idea that good governance may determine the overall success of such a broad development strategy.

Figure 8 Europe 2020 index correlation with public accounts and WB governance indicators (same years)
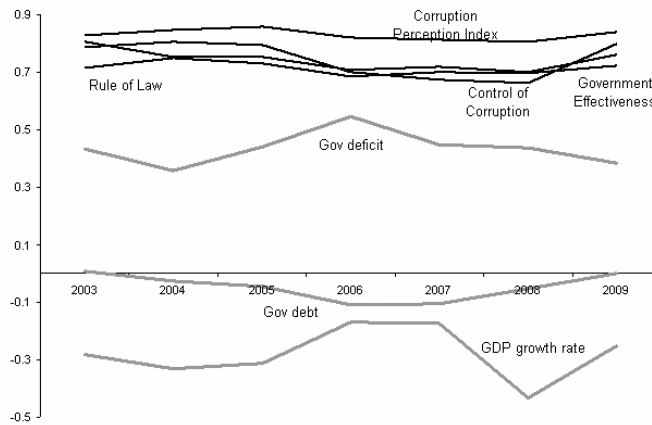
These results suggest that EU countries must constantly keep under control the levels of corruption, not just for the seek of ethical and moral objectives, but also for the attainment of their development objectives. We can observe how institutional factors of good governance, like levels of corruption, rule of law and effectiveness of governments

are more decisive than the traditional macroeconomic indicators of public finance to achieve the objectives of the Europe 2020 Strategy, as shown in Figure 8.

This result is quite relevant from a policy perspective, especially taking into account the current emphasis on public accounts as the main criteria to define structural reforms in the EU. If institutional factors are as relevant as fiscal consolidation for the pursuing of the objectives of the Europe 2020 Strategy, or even more as these results suggest, then the agenda for structural reforms might be enhanced, including a broader focus on institutions.

5   Institutions and the Europe 2020 Strategy

The analysis presented in the previous section highlights the role of formal institutions, as measured by the indicators of good governance, for the achievement of the Europe 2020 objectives. Corruption, in particular, seems to be the single most important factor. This result has been corroborated by two different measures, namely the World Bank's *Control of Corruption* indicator, and the Transparency International's *CPI*.

The literature on corruption and on its relation with development (Rose-Ackerman, 1975) has emphasised several channels trough which it has adverse effects on economic growth (Bardhan, 1997), on investments (Mauro, 1995), on inequalities and poverty (Gupta and Alonso-Terme, 2001), on education (Shleifer and Vishny, 1993), explaining the incentive structure that may favour the diffusion of corrupted actions in the society. Corruption has negative effects on the effectiveness and on the efficiency of the use of the resources deployed to foster economic development; it acts as a clamp on the whole economic system and may determine the success or failure of development strategies, such as the Europe 2020 one.

There is a certain current of thought among economists, called 'free-market libertarians' by Rose-Ackerman (2010), which has tried to associate the levels of corruption with the size of governments (Becker and Stigler, 1974; Becker, 1995; Banerjee, 1997; Alesina and Angeletos, 2005). In Becker's (1995) words "if you want to cut corruption, cut governments", because bigger governments raise the opportunities for corruption. According to Alesina and Angeletos (2005) "the larger the resources controlled by the government, or the more extensive the regulation of the market, the larger the scope for corruption and rent seeking", and on this basis they claim that "government intervention fosters corruption and injustice". Also Banerjee (1997) explicitly models bureaucracy and corruption, reaching the conclusion that "a significant part of what we see as government failures may exist even when a government has the best of intentions and is subject to no special sociological constraints".

For the purposes of this analysis, it can be interesting to see whether the strict correlation between the Europe 2020 Index and the control of corruption also implies a negative correlation with the size of the government in the member states, as suggested by the 'free-market libertarians' hypothesis. According to this hypothesis, control of corruption and the CPI, which are 'positive' measures of corruption (the higher the value, the lower the corruption level) should have a negative correlation with the size of government, in the 27 member states. Consequently, the Europe 2020 Index should also be negatively correlated with the same indicator of size of government.

The OLS regression analyses seem to contradict this hypothesis, showing instead a positive correlation. This correlation is also moderately strong, both in the case of

Control of Corruption (r = .600; ρ = .585), and for the *CPI* (r = .589; ρ = .576). This has also been valid over the previous years:

Figure 9 Correlations with size of government (same years)
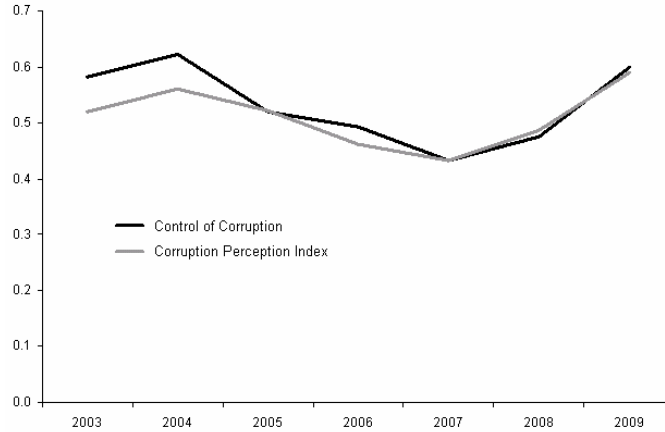
These results suggest that in the EU those countries where the size of the government is bigger, meaning that general government expenditures have a higher share on GDP, tend to be those with a better control over corruption. This should imply a positive correlation between the Europe 2020 Index and the size of government, which is in fact confirmed by the following figures:

Figure 10 Europe 2020 and size of government (see online version for colours)
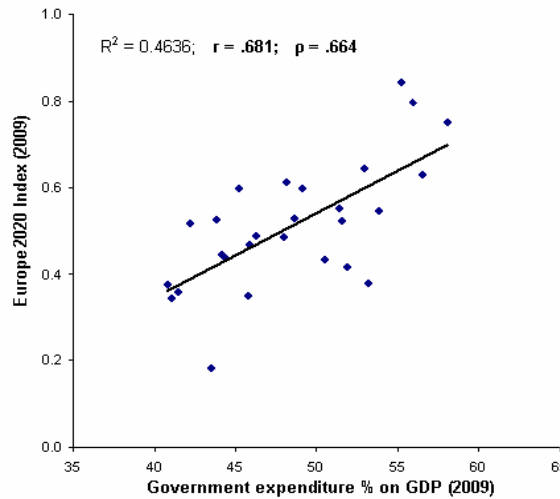
The Europe 2020 Index is not negatively correlated with the size of government; on the contrary the relation is quite positive. The hypothesis of size government being the main incentive for corruption seems not to hold true in the case of the EU, even though government expenditures are not exempt from mismanagement and misbehaviours. The

point is that limiting the scope of the problem to a merely quantitative account of the opportunities for corruption, instead of focussing on the quality and capacity of the state intervention and on the necessary accountability mechanisms, might be superficial. The analysis of the impact of corruption on the economy and of its underlying causes should probably be more accurate.

Informal institutional factors can further contribute to shed some light on the performances of EU countries in the Europe 2020 Strategy, as measured by the Europe 2020 Index. The role of social capital has been considered for this analysis. In the most recent economic literature on economic development the notion of social capital is increasingly emphasised as a factor determining economic performances. Just like other forms of capital (physical, financial and human) it is considered a facilitator for the economic activities, contributing at both microeconomic level (with its ability to improve market functioning) and macroeconomic level (affecting the global organisation of production). To some extent, it has become a concept for defining 'the missing ingredient' in successful practise that economics cannot explain (Landabaso et al., 2007).

Most of the definitions of social capital highlight components like norms, values, voice, feelings of trust, solidarity and reciprocity, which enable better social interactions, coordination, networking and organisational capacity that in turn act as facilitators of the economic activity. It is a sociological and psychological concept having certain relevance for economic development. One of the most common proxies for social capital is a measure of generalised trust, provided by the World Value Survey indicator 'most people can be trusted' (Inglehart et al., 2011). This indicator is available for the 27 member states of the EU, across different periods.

The OLS regression shows one of the strongest linear correlation with the Europe 2020 Index (Pearson = .750; Spearman = .637; significance: 99.9%), as in Figure 11. The linear regression coefficient (Pearson) is one of the highest found in the analysis, highlighting the role of social capital as determinant for the Europe 2020 Strategy.

Figure 11	Europe 2020 and social capital (see online version for colours)
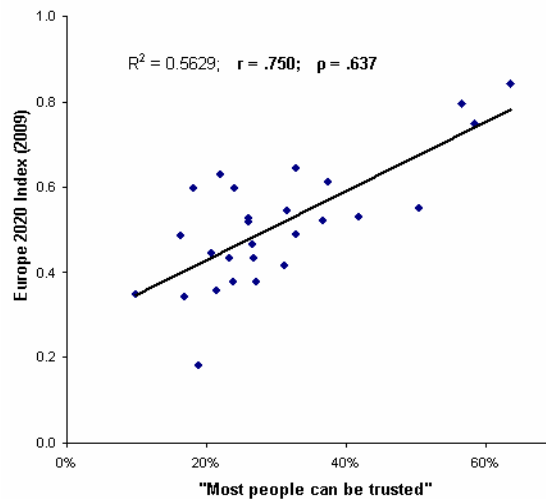
This substantiates the relevance of social capital for development, in particular for the objectives pursued by the Europe 2020 Strategy in the EU. Even though this correlation does not automatically imply a causal relation between the two measures, the fact that the measure of social capital is a weighted aggregate covering several periods (from the 1980s to 2005), and that the Europe 2020 Index values are those of 2009, may justify a prudent inference of causal relations.

6 Conclusions

This paper has developed a study of the Europe 2020 Strategy by improving the Europe 2020 Index and applying it to the analysis of the critical factors of success for the strategy. The external analysis of the index confirms that competitiveness is an important element of the strategy, as the extremely strong correlation with the global competitiveness index indicates. Levels of globalisation, instead, are decreasingly relevant in explaining the differences among the member states of the EU, suggesting that a certain convergence is taking place in the degree of openness.

The analysis shows that institutional factors are more decisive to achieve the objectives of the Europe 2020 Strategy than macroeconomic indicators of public accounts, such as GDP growth, levels of government debt and deficit. This is true for formal institutional factors of good governance, such as levels of corruption, rule of law and effectiveness of governments, as well as for informal institutions, such as social capital.

This result is relevant from a policy perspective, due to the present emphasis on public accounts as the main criteria to define structural reforms in the EU. If institutional factors are as relevant as fiscal consolidation for the pursuing of the objectives of the Europe 2020 Strategy, or even more relevant, as these results suggest, then the agenda for structural reforms could be enhanced, including a broader focus on institutions.

The costs of corruption are often underestimated in developed countries, but these results show that they must constantly be kept under control since they are determinant for the implementation of development policies in the member states of the EU. The analysis of the impact of corruption on the economy and of its underlying causes should probably be more accurate. Corruption has negative impacts on the effectiveness and on the efficiency of the use of the resources deployed to foster economic development; it acts as a clamp on the whole economic system and may determine the success or failure of development strategies, such as the Europe 2020 one.

The analysis of informal institutions suggests that social capital has indeed a relevant role for this strategy, substantiating what has often been argued in the recent economic literature, that it is a critical factor of success for development.

The paper also aims to create basis for further research. In particular, further analysis could be conducted, if we were able to gather data at regional level for the eight indicators composing the index. This could provide us with more meaningful and robust insights on the key success factors of the Europe 2020 Strategy.

Acknowledgements

References

Alesina, A. and Angeletos, G.M. (2005) 'Corruption, inequality and fairness', *Journal of Monetary Economics*, Vol. 52, No. 7, pp.1227–1244.

Banerjee, A.V. (1997) 'A theory of misgovernance', *The Quarterly Journal of Economics*, Vol. 112 No. 4, pp.1289–1332.

Bardhan, P. (1997) 'Corruption and development: a review of issues', *Journal of Economic Literature*, Vol. 35, No. 3, pp.1320–1346.

Becker, G.S. (1995) 'If you want to cut corruption, cut government', *Business Week.*

Becker, G.S. and Stigler, G.J. (1974) 'Crime and punishment: an economic approach', *The Journal of Political Economy*, Vol. 76, No. 2, pp.169–217.

Dreher, A. (2006) 'Does globalization affect growth? Evidence from a new index of globalization', *Applied Economics*, Vol. 38, No. 10, pp.1091–1110.

Dreher, A., Gaston, N. and Martens, P. (2008) *Measuring Globalisation – Gauging its Consequences*, Springer, New York.

Ebert, U. and Welsch, H. (2004) 'Meaningful environmental indices: a social choice approach', *Journal of Environmental Economics and Management*, Vol. 47, No. 2, pp.270–283.

European Commission (2010) *Europe 2020: A Strategy for Smart, Sustainable and Inclusive Growth*, COM, 2020, European Commission, Brussels.

Gupta, D. and Alonso-Terme, R. (2001) 'Does corruption affect income inequality and poverty?', *Economics of Governance*, Vol. 3, No. 1, pp.23–45.

Huggins, R. (2010) 'Regional competitive intelligence: benchmarking and policy-making', *Regional Studies*, Vol. 44, No. 5, pp.639–658.

Inglehart, R. et al. (2011) *World Value Survey*, available at http://www.worldvaluessurvey.org (accessed on 30 January 2012).

Kaufmann, D., Kraay, D. and Mastruzzi, M. (2010) 'The worldwide governance indicators: methodology and analytical issues', World Bank Policy Research Working paper No. 5430.

Landabaso, M., Kuklinski, A. and Román, C. (2007) *EUROPE – Reflections on Social Capital, Innovation and Regional Development: The Ostuni Consensus*, REUPUS, Warsaw.

Mauro, P. (1995) 'Corruption and growth', *Quarterly Journal of Economics*, Vol. 110, No. 3, pp.681–712.

North, D.C. (1991) 'Institutions', *Journal of Economic Perspectives*, Vol. 5, No. 1, pp.97–112.

OECD (2008) *Handbook on Constructing Composite Indicators: Methodology and User Guide*, OECD Publishing.

Pasimeni, P. (2011) 'The Europe 2020 index', *Social Indicators Research*, doi: 10.1007/s11205-011-9948-9.

Rose-Ackerman, S. (1975) 'The economics of corruption', *Journal of Public Economics*, Vol. 4, No. 2, pp.1–17.

Rose-Ackerman, S. (2010) 'Corruption: greed, culture and the state', *120 Yale Law Journal*, Vol. 125, No. 409.

Saltelli, A., D'Hombres, B., Jesinghaus, J., Manca, A., Mascherini, M., Nardo, M. and Saisana, M. (2011) 'Indicators for EU policies: business as usual?', *Social Indicators Research*, Vol. 102, No. 2. pp.197–207, doi:10.1007/s11205-010-9678-4.

Schwab, K., Sala-i-Martin, X., Blanke, J., Hanouz, M.D., Mia, I. and Geiger, T. (2010) 'The global competitiveness report 2009–2010', *World Economic Forum.*

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An Institutional Analysis of the Europe 2020 Strategy

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Abstract The inherent complexity of the Europe 2020 Strategy, focused on areas where the European Commission has not full jurisdictional competence, increases the relevance of a timely and precise monitoring system and of effective and efficient institutional settings. This paper performs a quantitative evaluation of countries' performances, using the Europe 2020 Index (Pasimeni in Soc Indic Res 110(2): 613–635, 2011. doi:10.1007/s11205-011-9948-9). We observe differences among countries and across time, and investigate their determinants by means of a model including potential explanatory variables, such as level of wealth, growth, sustainability of public finances and institutions. We refer to institutions in the sense of North (J Econ Perspect 5(1):97–112, 1991), and apply the distinction between formal and informal ones. The analysis confirms the importance of formal and informal institutions, both in absolute and in relative terms, compared with the other factors considered. Institutional variables, such as good governance and social capital, are the most significant ones and have the strongest estimated effects on countries' performances.

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1 Introduction

The Europe 2020 Strategy was launched in 2010 as the main development strategy for the current decade in the European Union (EU). It was the result of a political consensus among the governments of the 27 Member States (MS) to address the main structural challenges of the EU.[1]

Its ambition was to help the EU moving out of the crisis, avoiding "the reflex to try to return to the pre-crisis situation" and changing the model of development, in order to overcome the structural weaknesses in Europe's economy, improve its competitiveness and productivity and underpin a sustainable social market economy (European Commission 2010).

Three priorities were identified as main pillars of this strategy: Smart growth—developing an economy based on knowledge and innovation; Sustainable growth—promoting a more resource efficient, greener and more competitive economy; and Inclusive growth—fostering a high-employment economy delivering economic, social and territorial cohesion.

The new initiative took over from the Lisbon strategy as the overarching political framework for the Union, trying to overcome one of the main weaknesses of the predecessor: the lack of a comprehensive system of monitoring of the performance achieved by the MS towards the common objectives.

One of the key obstacles for such supranational strategies to reach their objectives is that some of the main policy areas they focus on fall outside the EU's legal competence. Most of the core Lisbon targets, for instance, concerned areas where the EU does not have any jurisdictional competence (Erixon 2010). Political will at the national level, then, is decisive to determine the effectiveness of the strategy.

A second reason often presented to explain why the Lisbon Strategy did not actually deliver the expected results relates to the lack of an appropriate system of monitoring and evaluation of performance, based on clear, objective and precise indicators.[2] The risk for the Europe 2020 Strategy was to maintain these inherent strategic weaknesses in its architecture (Sarcinelli 2010).

In the preparation of this new strategy, therefore, there was the conviction that in order to achieve a verifiable progress the related assessments should be grounded in an indicator-based analysis. For this reason a set of eight headline indicators, with targets and expected results, was proposed and accepted by the MS. Moreover, the governance structure of these strategies evolved overtime, from the "national action programmes" of the original Lisbon Strategy, to the "national reform programmes" of the revised Lisbon Strategy, to the new "reform programmes" under the Europe 2020 Strategy. This new strategy goes together with the European Semester[3] and the so-called "country specific recommendations".[4]

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[1] The EU had 27 Member States until 1 July 2013, when Croatia joined, becoming the 28th.

[2] The Lisbon Strategy actually had some indicators, and initially foresaw a performance ranking of member states, however this approach was not fully implemented.

[3] The European Semester is the first phase of the EU's annual cycle of economic policy guidance and surveillance. Each European Semester, the European Commission analyses the fiscal and structural reform policies of every Member State, provides recommendations, and monitors their implementation. In the second phase of the annual cycle, known as the National Semester, Member States implement the policies they have agreed.

[4] The country specific recommendations are based on an assessment of every Member State's plans for sound public finances (Stability or Convergence Programmes) and policy measures to boost growth and jobs (National Reform Programmes).

In literature, we find already some attempts to use these indicators to study the preliminary results of the strategy. Pasimeni (2011, 2012) developed a synthetic composite index to quantify, measure and monitor progress achieved by countries in the strategy. This paper will use that index in order to study which factors are more likely to determine success or failure in the Europe 2020 Strategy, measuring the relative importance of economic and institutional factors. The next section reviews the index, develops it for 10 years (2003–2012), and monitors the different performances of the MS. Section 3 presents the current policy context, while Sect. 4 explains the theoretical foundations of the institutional economics hypothesis. Section 5 presents the econometric analysis and results, which are discussed in Sect. 6. Section 7, finally, concludes.

2 The Europe 2020 Index

The Europe 2020 Index, as proposed in Pasimeni (2011, 2012), is a composite index, based on three thematic sub-indices representing the three dimensions of growth identified as main pillars of the strategy. The thematic sub-indices, in turn, are built on the eight official headline indicators set when the strategy was launched. These include economic, environmental and social indicators, which are calculated at national level, timely published by Eurostat,[5] and allow comparability over time and across countries.

The eight official indicators defining the targets are: 75 % of the population aged 20–64 should be employed; 3 % of the EU's GDP should be invested in R&D; greenhouse gas emissions should be reduced by 20 % compared to 1990; the share of renewable energy sources in final energy consumption should be increased to 20 %; energy efficiency should improve by 20 %; the share of early school leavers should be under 10 %; at least 40 % of 30–34 years old should have completed tertiary or equivalent education; and the number of people at risk of poverty or social exclusion should be reduced at least by 20 million (Fig. 1).

The eight indicators are normalized through a max–min normalization method,[6] and aggregated in two steps, with a geometric mean.[7] Equal weights are assigned to each one, in order not to privilege any dimension of the strategy over another. The formula composing the index is a double geometric mean:

$$I_g = \prod_{i=1}^{n} \left[\left(\prod_{i=1}^{l} Xi \right)^{\frac{1}{l}} \right]^{\frac{1}{n}}$$

where I is the index, X the headline indicator, l is the number of headline indicators, and n the number of sub-indices. The first aggregation generates the three sub-indices, corresponding to the three main pillars of the strategy (smart, sustainable and inclusive), and the

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[5] Available at: (http://epp.eurostat.ec.europa.eu/portal/page/portal/europe_2020_indicators/headline_indicators).

[6] $X_{ic} = \dfrac{x_{ic} - \min_k\{x_{ik}\}}{\max_k\{x_{ik}\} - \min_k\{x_{ik}\}}$ and $X_{ic} = \dfrac{\max_k\{x_{ik}\} - x_{ic}}{\max_k\{x_{ik}\} - \min_k\{x_{ik}\}}$, for "positive" and "negative" indicators.

[7] The geometric mean: $I_g = \left(\prod_{i=1}^{n} Xi \right)^{\frac{1}{n}}$ is preferred to the arithmetic one, because it accounts for the deviation from the average and satisfies the property of interval-scale unit comparability. In other words, for our purposes of cross-country comparison, it means rewarding those countries presenting more equilibrated values of the three main components of the Index, i.e. a more balanced profile.
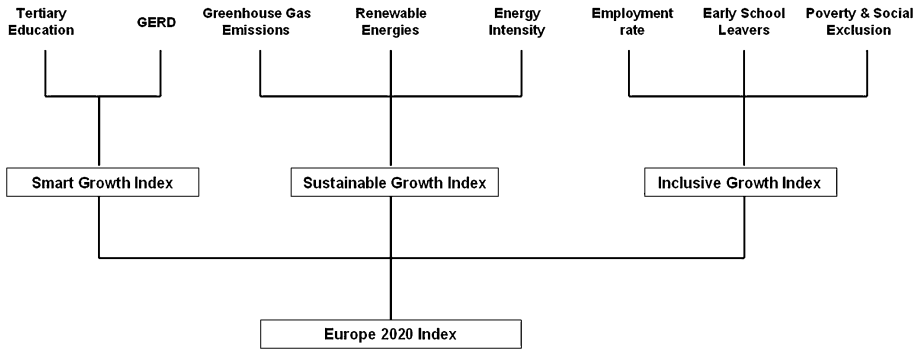
Fig. 1 Structure of the Europe 2020 Index. *Source*: Pasimeni (2011)

second one produces the main index. The second aggregation generates the overall Europe 2020 Index. This instrument allows for a yearly monitoring of the progress made by each country. With the data available[8] the three sub-indices and the index can be built for ten consecutive years: from 2003 to 2012.

Although the Europe 2020 Strategy has been launched in 2010 and is meant to cover the decade 2010–2020, the availability of all the indicators composing our index already since 2003, makes it interesting to perform an analysis over the whole period for which we are able to construct the index. This period (2003–2012) mainly covers the years when the Lisbon Strategy was the headline strategy for the EU, however the analysis conducted through the Europe 2020 Index is relevant because can help us understand the situation of each member state in terms of the new indicators and identify ongoing trends in the key areas of the new strategy.

The following table presents the overall score of each country, each year, in the Europe 2020 Index (Table 1).

The final score of the Index varies from the lowest value of 0.085, registered by Malta in 2003, to the highest one of 0.849, registered by Sweden in 2012. All the countries have improved their scores in the reference period, for which all the data are available; there is however some variation in these trends. For instance Latvia in 2009 suffered an abrupt worsening of the overall index. By looking more in the details of the components, we find that the abrupt worsening was mainly driven by the "inclusive growth sub-index", due to the critical deterioration of its employment rate, as a consequence of the crisis. The same happened to Cyprus in 2008, when the "sustainable growth sub-index" registered an abrupt fall, driven by the peak in greenhouse gas emissions the country had in that year. Since then the situation is constantly improving.

At the same time we observe some outstanding relative performances throughout the period, like Bulgaria, Poland, and to a certain extent also Malta, who are clearly catching up, starting from lower levels, but also and significantly like Estonia in the last few years for which data are available. In 2011 the Baltic country managed to considerably increase its relative performance and jumped four places up in the ranking, reaching the fourth position. In the last 2 years, we observe a significant decrease of the score of Spain, mainly driven by the "inclusive growth sub-index", due to the dramatic fall in employment levels (Table 2).

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[8] Last extraction: 10 July 2014.

Table 1 Europe 2020 Index overall score (2003–2012)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium	0.445	0.445	0.456	0.476	0.490	0.503	0.530	0.540	0.547	0.571
Bulgaria	0.133	0.231	0.236	0.254	0.273	0.324	0.349	0.355	0.339	0.359
Czech Rep	0.355	0.356	0.366	0.378	0.396	0.417	0.444	0.468	0.504	0.540
Denmark	0.643	0.655	0.671	0.664	0.661	0.688	0.714	0.712	0.725	0.744
Germany	0.513	0.523	0.530	0.540	0.560	0.572	0.601	0.606	0.624	0.640
Estonia	0.453	0.462	0.491	0.530	0.527	0.557	0.572	0.588	0.651	0.647
Ireland	0.391	0.414	0.424	0.437	0.454	0.476	0.510	0.509	0.521	0.532
Greece	0.327	0.331	0.342	0.349	0.354	0.354	0.364	0.378	0.386	0.390
Spain	0.390	0.377	0.382	0.405	0.407	0.442	0.466	0.479	0.474	0.466
France	0.558	0.557	0.563	0.571	0.581	0.593	0.613	0.612	0.609	0.626
Italy	0.336	0.338	0.350	0.365	0.377	0.392	0.409	0.417	0.426	0.441
Cyprus	0.261	0.264	0.272	0.278	0.261	0.192	0.300	0.325	0.335	0.351
Latvia	0.341	0.360	0.393	0.432	0.458	0.467	0.428	0.458	0.497	0.510
Lithuania	0.412	0.451	0.476	0.498	0.504	0.519	0.519	0.514	0.546	0.563
Luxembourg	0.343	0.382	0.418	0.423	0.457	0.474	0.508	0.491	0.492	0.502
Hungary	0.341	0.343	0.346	0.365	0.379	0.397	0.425	0.435	0.452	0.472
Malta	0.085	0.151	0.159	0.186	0.179	0.183	0.187	0.197	0.229	0.252
Netherlands	0.469	0.454	0.471	0.486	0.498	0.516	0.533	0.524	0.549	0.564
Austria	0.538	0.542	0.553	0.567	0.580	0.597	0.626	0.624	0.629	0.654
Poland	0.279	0.302	0.320	0.335	0.357	0.385	0.417	0.430	0.445	0.476
Portugal	0.318	0.322	0.329	0.367	0.401	0.442	0.465	0.485	0.505	0.507
Romania	0.213	0.240	0.261	0.281	0.309	0.345	0.336	0.342	0.359	0.368
Slovenia	0.481	0.504	0.503	0.527	0.535	0.540	0.580	0.602	0.626	0.651
Slovakia	0.268	0.270	0.285	0.294	0.309	0.322	0.344	0.388	0.409	0.433
Finland	0.693	0.707	0.734	0.727	0.737	0.762	0.772	0.754	0.769	0.777
Sweden	0.734	0.744	0.771	0.792	0.802	0.822	0.834	0.819	0.836	0.849
UK	0.442	0.423	0.437	0.453	0.462	0.482	0.509	0.514	0.534	0.540

Source: Own calculations (based on Pasimeni 2012)

Countries are listed according to the EU official protocol

In this table we can actually observe how relative positions have changed throughout the period considered. Some countries have lost ground, notably Spain lost six positions and France four, followed by Greece, which lost three. Others, instead, have remarkably improved their position, in particular Estonia, as already mentioned, Latvia, Poland and Portugal, which are clearly catching up throughout the period. The Estonian exploit in the index is mainly due to the "smart growth sub-index", driven by an important increase (+46 %) of the gross domestic expenditure on R&D in 2011. The constant improvement of Poland in the index throughout the period was initially driven by a particularly strong improvement the "inclusive growth" pillar until 2008, and by the "smart growth" one, since then. Portugal's positive performance has been driven by a steady increase in the tertiary education attainment and a considerable reduction in early school leaving. Falling employment rates, however, have slowed down its performance in the last years. The

Table 2 Europe 2020 Index overall ranking (2003–2012)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium	10	11	11	11	11	11	10	9	10	9
Bulgaria	26	26	26	26	25	24	23	24	25	25
Czech Rep	15	17	17	17	18	18	17	17	15	13
Denmark	3	3	3	3	3	3	3	3	3	3
Germany	6	6	6	6	6	6	6	6	7	7
Estonia	9	8	8	7	8	7	8	8	4	6
Ireland	13	13	13	13	15	13	12	13	13	14
Greece	20	20	20	21	22	22	22	23	23	23
Spain	14	15	16	16	16	16	15	16	18	20
France	4	4	4	4	4	5	5	5	8	8
Italy	19	19	18	20	20	20	21	21	21	21
Cyprus	24	24	24	25	26	26	26	26	26	26
Latvia	18	16	15	14	13	15	18	18	16	15
Lithuania	12	10	9	9	9	9	11	11	11	11
Luxembourg	16	14	14	15	14	14	14	14	17	17
Hungary	17	18	19	19	19	19	19	19	19	19
Malta	27	27	27	27	27	27	27	27	27	27
Netherlands	8	9	10	10	10	10	9	10	9	10
Austria	5	5	5	5	5	4	4	4	5	4
Poland	22	22	22	22	21	21	20	20	20	18
Portugal	21	21	21	18	17	17	16	15	14	16
Romania	25	25	25	24	23	23	25	25	24	24
Slovenia	7	7	7	8	7	8	7	7	6	5
Slovakia	23	23	23	23	24	25	24	22	22	22
Finland	2	2	2	2	2	2	2	2	2	2
Sweden	1	1	1	1	1	1	1	1	1	1
UK	11	12	12	12	12	12	13	12	12	12

Source: Own calculations

Countries are listed according to the EU official protocol

Latvian performance is positively influenced by a particularly high score in the "environmental sustainability" dimension, mainly due to the share of renewable energy in gross final energy consumption, where it is already well above the EU target for 2020.

Table 3 presents the values of the three sub-indices composing the Europe 2020 Index for the most recent year for which data are available. Sweden stands out as the first in all rankings, but most of the other Member States show more heterogeneous profiles, performing quite differently in the three dimensions of the strategy. We can observe great variation in the performances among countries and across time.

Table 3 "Smart Growth", "Sustainable Growth", and "Inclusive Growth" sub-indices (values and ranking, 2012)

SMGI (2012)			SUGI (2012)			INGI (2012)		
Sweden	0.870	1	Sweden	0.787	1	Sweden	0.895	1
Finland	0.865	2	Latvia	0.724	2	Netherlands	0.871	2
Denmark	0.758	3	Finland	0.653	3	Austria	0.846	3
Slovenia	0.693	4	Denmark	0.653	4	Czech Rep	0.835	4
France	0.662	5	Lithuania	0.621	5	Denmark	0.833	5
Belgium	0.657	6	Austria	0.614	6	Germany	0.832	6
Germany	0.630	7	Romania	0.597	7	Finland	0.831	7
Netherlands	0.629	8	Estonia	0.582	8	Luxembourg	0.805	8
Ireland	0.619	9	Portugal	0.522	9	Slovenia	0.787	9
Estonia	0.603	10	Slovenia	0.506	10	Estonia	0.773	10
UK	0.590	11	Germany	0.501	11	UK	0.768	11
Luxembourg	0.553	12	Italy	0.492	12	France	0.761	12
Austria	0.538	13	France	0.486	13	Slovakia	0.743	13
Spain	0.455	14	Slovakia	0.456	14	Cyprus	0.730	14
Czech Rep	0.420	15	Hungary	0.451	15	Belgium	0.725	15
Lithuania	0.405	16	Greece	0.450	16	Lithuania	0.709	16
Portugal	0.385	17	Czech Rep	0.448	17	Poland	0.705	17
Hungary	0.377	18	Poland	0.429	18	Latvia	0.663	18
Poland	0.355	19	Spain	0.415	19	Ireland	0.658	19
Italy	0.296	20	Bulgaria	0.408	20	Portugal	0.647	20
Latvia	0.277	21	Belgium	0.392	21	Hungary	0.619	21
Greece	0.254	22	Ireland	0.370	22	Malta	0.611	22
Cyprus	0.244	23	UK	0.348	23	Italy	0.587	23
Slovakia	0.239	24	Netherlands	0.328	24	Romania	0.555	24
Malta	0.233	25	Luxembourg	0.284	25	Spain	0.537	25
Bulgaria	0.219	26	Cyprus	0.242	26	Greece	0.520	26
Romania	0.151	27	Malta	0.113	27	Bulgaria	0.519	27

Source: Own elaborations (based on Pasimeni 2012)

3 Policy Context

The descriptive analysis based on the Europe 2020 Index allows a proper monitoring of the achievements of the Member States in the strategy. However it does not allow us to understand which factors determine these results, what helps improving performances and what causes divergences over time and between countries. Our analysis will try to understand which factors are more likely to be associated with positive performances of the countries in the Europe 2020 Strategy.

The years since the Europe 2020 Strategy was launched have been intensely characterised by deep changes in the governance of the EU. The focus has been put on a new macroeconomic governance, for the Eurozone in particular, but not exclusively. A wide set of legislative acts has been agreed to reform the Stability and Growth Pact (Regulation

(EU) 1175/2011 and 1177/2011), to prevent and correct macroeconomic imbalances (Regulation 1176/2011), to enforce measures that correct excessive macroeconomic imbalances in the euro area (Regulation 1174/2011), to guarantee the effective budgetary surveillance in the euro area (Regulation 1173/2011, and to set the requirements of the budgetary framework for the Member States (Directive 2011/85EU). The Euro Plus Pact, in addition, contains a set of quantitative targets and the commitments by the signatory countries to a list of political reforms, intended to improve their fiscal strength and competitiveness.

The so-called 'six-pack,' the 'two-pack,' the Euro Plus, and the Treaty on Stability, Co-ordination and Governance in the Economic and Monetary Union (the 'fiscal compact') have consequently centred the attention of EU policy-making on the main macroeconomic indicators, while at the same time the Europe 2020 Strategy remained the overarching strategy setting the long term objectives for the EU.

The importance of economic growth and of the sustainability of public finance is central in the new macroeconomic architecture of the EU. Our aim is to understand how relevant they are in ensuring success and sustainability of the Europe 2020 Strategy, and to disentangle their specific impact on countries' performances. In our analysis of the potential determinants of performances in the strategy, we take account of these factors, together with another set of indicators aiming at considering the role of institutions.

The level of general government gross debt and the general government deficit (or surplus) are key fiscal parameters, introduced already by the Maastricht Treaty. They were introduced as building criteria for the Economic and Monetary Union (EMU), and were considered necessary for its sustainability. For a review of the process conducting to the establishment of these parameters and for their macroeconomic significance, see Buiter et al. (1993), Dornbusch (1996, 1997), Delors (2013). We test them in order to assess their importance in the strategy.

While none of the indicators of the Europe 2020 Strategy is based on GDP, a good overall economic performance of the country could also determine good performance in the strategy. For this reason a measure of GDP growth is introduced in our model, to understand to what extent it influences the results.

We also observe from the data that many of the top performing countries, according to our index, happen to be relatively wealthier than the average. Richer countries might be better equipped to progress in the different dimensions of the strategy. In order to disentangle this possible effect, we introduce the measure of GDP per capita, in purchasing power standards, into the model.

Another possible line of thought, instead, emphasises the role of institutions in promoting processes of development. The question of how institutions influence progress has long been central in the study of economic development (Veblen 1898; Commons 1931; Williamson 1975; Coase 1984; North 1991; Rodrik 2008; Dixit 2009). We think that the "institutional" view might also provide a useful interpretative framework to our analysis.

The role of institutions could be another potential determinant of success factors in the Europe 2020 Strategy, and for this reason, we include this perspective in our analysis. We analyse the "institutional economics" literature in order to find possible explanatory variables, which help us disentangling the most significant factors explaining better performances in the strategy, as measured by our index.

4 Institutions

The so-called "institutionalism" has become increasingly central in the economic literature (Coase 1998; Hodgson 1998; Williamson 2000; Parada 2001). It attempts to incorporate a theory of institutions into economics (North 1993).

Ronald Coase (1937) first introduced explicitly the notion of transaction costs into economic analysis. Oliver Williamson (1975) and Douglas North (1991) used the concept of reduction of transaction costs to explain why a more efficient institutional system promotes development by "creating order and reducing uncertainty". Since these seminal works, the role of institutions has been studied and recognised as central in the process of economic development.

North (1991) defined institutions as "the rules of the game". They are "humanly devised constraints that structure political, economic and social interaction", and "they consist of both informal constraints, and formal rules" (p. 97). Dixit (2009) highlighted "the structure and functioning of the legal and social institutions that support economic activity and economic transactions by protecting property rights, enforcing contracts, and taking collective action to provide physical and organizational infrastructure" (p. 5).

Many authors have studied the relationship between institutions and economic performances (Olson 1982; Knack and Keefer 1997; Hall and Jones 1999; Rodrik 2008; Acemoglu and Robinson 2010; Chang 2011). All of these studies focus on the effect of institutions on economic growth, on the level of investment or on development.

Acemoglu and Robinson (2010) argued that institutions are the main determinants of differences in prosperity across countries; and in particular Acemoglu et al. (2003) suggested the existence of a "robust and strong effect of institutions on the volatility of economic activity", which in turn has strong implications for economic development.

Dollar and Kraay (2003) studied the relations between institutions and trade, finding that good quality of the institutions was related to higher levels of trade and that both were particularly important in determining the growth prospects of countries. Rodrik et al. (2004) estimated the contribution of institutions, geography and trade in determining income levels around the world, finding that the quality of institutions outranks by far all the other factors.

Some authors (Chang 2011), on the other side, have criticised the dominant view of institutions as determinants of economic development, and have argued that an improvement in the quality of institutions might be the consequence of the process of economic development, mainly driven by a better human capital (Glaeser et al. 2004).

In order to study if and how formal and informal institutions can be associated to success or failure in the Europe 2020 Strategy, the distinction between formal and informal institutions must be introduced.

4.1 Formal Institutions

Formal institutions are laws, rules and mechanisms that define the system in which economic agents can operate. They include the constitutional rules of the political game, the legislature that makes specific regulations within this context, the courts, the police, as well as licensing and regulatory agencies that interpret and enforce these rules.

Knack and Keefer (1997) suggest using property rights enforcements as main indicators of institutions; others look at measures of corruption (Mauro 1995), or at the levels of entry

barriers (Djankov et al. 2002), as good proxies. Formal institutions are linked, in literature, to the concept of good governance.

The World Bank developed a set of indicators aimed at measuring all different aspects of good governance: the Worldwide Governance Indicators[9] (WGI) (Kaufmann et al. 2010). Their use in the economic literature is growing exponentially, in parallel with the greater focus on institutional factors as explanatory variables for the process of economic development.

These indicators are widely used, but they are also subject to some criticism, because they may suffer from perceptual biases, adverse selection in sampling, and conceptual conflation with economic policy choices (Kurtz and Schrank 2007), or because their construction is based on untested hypotheses (Glaeser et al. 2004). However, the need to operationalize the concept of institutional quality and to develop robust models to assess their relevance implies that these indicators currently are the best source of data to perform an institutional analysis of the process of economic development.

The analysis of institutions as a key element of good governance moved from the field of development economics, and was initially applied to the study of developing countries. Subsequently, however, it has been found relevant for developed countries as well, and this is of particular relevance for our work.

Sachs and Warner (1997) studied the relation between trade openness and institutional quality and found that such factors are particularly relevant to explain economic development in all countries, not just in developing ones. The role of good institutions is key in explaining the integration in international trade, in particular why rich countries trade with each other, but developing countries less so (Anderson and Marcouiller 2002). The idea that institutional differences are an important determinant of trade flows is confirmed by Levchenko (2004), who shows how countries with better institutions capture larger import shares in industries that are more 'institutionally complex'.

Institutional quality, moreover, is considered to be the prime determinant of capital flows and investment across countries (Lambsdorff 2003; Alfaro et al. 2005), it explains most of variation in per capita incomes across countries (Acemoglu et al. 2001), and seems to be associated with higher investments in R&D (Clarke 2001) and lower volatility of macroeconomic policies (Acemoglu et al. 2003), leading to higher growth.

The concept of government effectiveness is the one on which we focus our attention. Among the governance indicators produced by the World Bank, government effectiveness tries to measure the general quality of public administration in one country, based on perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Given its comprehensiveness of all the main institutional characteristics relevant to ensure that national governments comply with agreed strategies, we consider it as the most appropriate indicator to test the relevance of formal institutions in determining good performance in a wide, governmental, development agenda like the Europe 2020 Strategy.

Government effectiveness is found to be strictly associated with the existence of transparent budget rules (Blume and Voigt 2013), with higher levels of fiscal decentralisation (Kyriacou and Roca-Sagalés 2011), and with better credit rating rates of sovereign

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[9] The Worldwide Governance Indicators report aggregate and individual governance indicators for 215 economies over the period 1996–2012, for six dimensions of governance: (1) Voice and accountability; (2) Political stability and absence of violence; (3) Government effectiveness; (4) Regulatory quality; (5) Rule of law; (6) Control of corruption.

debts (Afonso et al. 2007).[10] It leads to better social outcomes, like lower rates of some crime categories (Azfar and Gurgur 2005), and is the strongest macro-level predictor of support for democracy (Magalhães 2014).

According to Lee and Whitford (2009), much of the variation in the levels of government effectiveness is explained by national income, with wealthier countries experiencing greater perceptions of effectiveness, but in a more recent analysis Adams-Kane and Lim (2014) reverse the causality link, arguing that it is government effectiveness affecting per capita income, and they identify human capital formation as the key channel. The quality of institutions, as measured by government effectiveness, is central to learning and education, and human capital is found to have a significant and positive effect on per capita income levels.

The literature on government effectiveness emphasises the importance of having all the leverages of policy making work in an institutional environment with high quality of governance. This is why we use this indicator as a potential explanatory variable in our model.

4.2 Informal Institutions

The idea that informal institutions shaping the organization of a society may have a decisive effect on the economic performance of countries has been in the past one of the fundamental questions of political economy (Cole et al. 1992, p. 1095; Sabatini 2008). "Features of social organization, such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated actions" (Putnam 1993, p. 167) are what is commonly referred to as "social capital".

The concept of social capital has often been prone to multiple interpretations, having multiple dimensions and possible effects (Serageldin and Grootaert 2000). Its definition has several variations across the social sciences (Bourdieu 1986; Coleman 1988; Putnam 1993; Fukuyama 1995; Woolcock 1998; Ostrom 1999; OECD 2001). In sociology and political science it is often used as a property of organizations or countries, while in economics it is linked to the characteristics of individuals (Pugno and Verme 2012).

Economists have often used it to explain the role social interaction plays in promoting a better functioning of markets (Greif 1993). The literature on game theory, and in particular on repeated games, has highlighted at microeconomic level how cooperation can be enhanced thanks to social capital (Kreps et al. 1982; Abreu 1988). Social connections can even sometimes substitute legal structures and produce the same effect of reducing transaction costs, as we have seen for formal institutions (Arrow 1972; Glaeser et al. 2002).

Informal institutions, synthesised by the concepts of social capital and trust, are extremely relevant even in the most advanced market economies (Dixit 2009), since "reputation and the trust it fosters are the core attributes of market capitalism" (Greenspan 2007, p. 256). As Arrow (1972, p. 357) pointed out: "virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence".

The dimension of "trust" is considered as the most important to explain the economic function of social capital (Coleman 1988; Fukuyama 1995; Knack and Keefer 1997; Ostrom 1999; Zak and Knack 2001; Sabatini 2008), as an engine for enhanced efficiency

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[10] Interestingly, the study by Alfonso, Gomes and Rother has been performed before the start of the financial crisis and of the consequent sovereign debt problems in the Eurozone.

and economic growth (Pugno and Verme 2012), and as a key to overcome market failures linked to the difficulty to enforce or observe contracts (Karlan 2005). Most of the economic analyses of social capital use a generalised measure of interpersonal trust, as provided by the World Values Survey[11] (WVS) (Inglehart 1999; Sabatini 2009; Toya and Skidmore 2012).

The positive effect of social capital on growth and productivity has been highlighted by a very large body of literature (Fukuyama 1995; Knack and Keefer 1997; La Porta et al. 1997; Sobel 2002; Glaeser et al. 2002). Among these studies, it is worth highlighting the macro-econometric analysis by Knack and Keefer (1997), who found that an increase in the WVS measure of trust in one country increases economic growth too.

The same results, but on a wider sample, were found by Zak and Knack (2001), who argued that "growth rises by nearly 1 percentage point on average for each 15 percentage point increase in trust (a one standard deviation increase)" (Zak and Knack 2001, p. 307–309). They also argued that formal institutions may affect growth through their impact on trust: a better institutional setting is likely to enhance trust, thus reducing transaction costs and overcoming potential market failures, which leads to higher growth. Beugelsdijk et al. (2004) tested the robustness of these results, finding that if the first analysis (Knack and Keefer 1997) could be considered as "limitedly robust", the Zak and Knack (2001) results, instead, are highly robust both in terms of statistical significance of the estimated coefficients and in terms of the estimated effect sizes.

The literature on the effects of social capital, as measured by trust, suggests a series of positive effects: on trade (Greif 1993; Woolcock 1998), health (Putnam 2000; Rose 2000), school performance (Coleman 1988), entrepreneurship and innovation (Brüderl and Preisendörfer 1998; Dakhli and De Clercq 2004), the well-functioning of formal institutions (Williamson 2000), in terms of judicial efficiency, control of corruption and civic involvement (La Porta et al. 1997), crime prevention (Wilson 1987), and democratic stability (Inglehart 1999; Uslaner 2003). Social capital is also associated with higher reported levels of happiness (Uslaner 2003; Bjørnskov 2003), and life satisfaction (Helliwell et al. 2009; Pugno and Verme 2012).

Social capital, as measured by trust, seems the to be the best variable to include the role of informal institutions into our model, and to test whether or not it is a key factor in determining the performances of EU countries.

5 Econometric Analysis

We study how and to what extent the Europe 2020 Index is influenced by other measures and, if so, which are the most significant factors. Our hypothesis is that institutional factors might be the key explanatory variables, even more than the indicators of economic growth and public finances. For this reason we perform a set of multiple linear regression analyses.

The empirical strategy is to compose a large panel of 270 observations, covering 27 countries for 10 years, since 2003–2012, which are those for which the Europe 2020 Index can be calculated. The model has the Europe 2020 Index as the dependent variable (E2I).

Formal institutions are included in the model through the concept of good governance. The indicator of Government Effectiveness, from the World Governance

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[11] The WVS measures generalised trust through the question developed by Rosenberg (1956): "Generally speaking, would you say that most people can be trusted or that you can be too careful in dealing with people?".

Indicators,[12] is used as a measure of good governance. This indicator tries to capture the perceptions citizens have of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

Informal institutions are included through the concept of social capital. We use the generalised measure of trust (Trust), from the World Values Survey.[13] This indicator is based on a survey asking people whether they think that, generally speaking, most people can be trusted or one needs to be very careful in dealing with other people. The average, then, is computed for each country. It is a generalised measure of trust, which is often used as the best proxy for social capital.

The indicators of sustainability of public finances considered in the model are the general government gross debt (Debt[14]), and the general government deficit or surplus (Deficit[15]), both calculated in percentage of GDP and provided by the AMECO[16] database. Finally we test two additional independent variables: GDP growth (Growth[17]) and GDP per capita in purchasing power standards (GGDPpps[18]), as provided by Eurostat.

The model tests the role of the six explanatory variables in influencing the Europe 2020 Index (Table 4).

We first test the two institutional variables alone, and find a coefficient of determination of 56 %, which means the two variables explain more than half of total variation in the index. Both institutional variables, moreover, are strongly significant ($p = 0.000$) and have positive coefficients.

We gradually include the other variables, in order to understand whether they add explanatory power to the model, and find that debt and deficit do not add much, moreover they are not significant and have coefficients close to zero. The level of GDP per capita in purchasing power standards has the same null effect on our dependent variable. GDP growth is the only one which shows certain significance, but it is associated with extremely low coefficient, close to zero. It might be considered significant in the regression, but it does not influence the variation of our index.

Government effectiveness and trust, on the contrary, maintain their strong significance in all specifications of the model and the estimated effects are quite relevant. An increment of one unit of the government effectiveness indicator, holding constant all the other variables, leads to an increase in the Europe 2020 Index by 0.079 units, while the same increment in the generalised measure of trust leads to an increase in the index by 0.548 units. None of the other variables has a coefficient considerably different from zero, in any of the specifications of the model.

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[12] Available at: www.info.worldbank.org/governance/wgi.

[13] Available at: www.worldvaluessurvey.org.

[14] Available at: http://ec.europa.eu/economy_finance/db_indicators/ameco/zipped_en.htm.

[15] Available at: http://ec.europa.eu/economy_finance/db_indicators/ameco/zipped_en.htm.

[16] AMECO is the annual macro-economic database of the European Commission's Directorate General for Economic and Financial Affairs: http://ec.europa.eu/economy_finance/db_indicators/ameco/index_en.htm.

[17] Available at: http://ec.europa.eu/eurostat/tgm/table.do?tab=table&plugin=1&language=en&pcode=tec00115.

[18] Available at: http://ec.europa.eu/eurostat/en/web/products-datasets/-/TEC00114.

Table 4 Europe 2020 Index and institutional and economic factors

Dependent variable: Europe 2020 Index

Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)
Gov effectiveness	.074***	.077***	.071***	.078***	.073***	.079***
	(0.013)	(0.013)	(0.013)	(0.016)	(0.012)	(0.015)
Trust	.566***	.573***	.562***	.564***	.552***	.548***
	(0.060)	(0.061)	(0.059)	(0.060)	(0.060)	(0.060)
Debt		.000			−.001*	−.001*
		(0.000)			(0.000)	(0.000)
Deficit		−.002			.002	.000
		(0.002)			(0.002)	(0.002)
Growth			−.004*		−.005**	−.005**
			(0.002)		(0.002)	(0.002)
GPDpps				.000		.000
				(0.000)		(0.000)
Constant	.208***	.215***	.220***	.212***	.250***	.257***
	(0.015)	(0.019)	(0.016)	(0.018)	(0.022)	(0.024)
Observations	270	270	270	270	270	270
R-sq	0.560	0.565	0.571	0.561	0.580	0.581
n° countries	27	27	27	27	27	27

Robust t-statistics in brackets. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$. Test (F): Prob $> F = 0.0000$. The main assumptions are verified: linearity of the relationship; independence of the observations; normality of the residuals; homoscedasticity

6 Discussion

Our attempt to disentangle the main factors affecting the performance of EU Member States in pursuing the goals of the Europe 2020 Strategy points to the importance of institutions. Formal and informal institutions seem to play a decisive role in explaining the different performances of European countries in the Europe 2020 Strategy, more than the other economic variables, based on GDP, which have been tested through our model. Both formal and informal institutions play a prominent role in such a complex development strategy, with social capital being the first and most relevant factor.

These results confirm the "institutional" view, suggesting that effectiveness of policy making strongly depends on context factors, and that the institutional environment in which it takes place may actually determine a great deal of its chances to succeed.

The results of the analysis give a robust support to the hypothesis that good governance is particularly important in such a strategy. As we saw before, many of the policy fields on which the Europe 2020 Strategy focuses fall out of the direct competences of the EU, and this implies that national policy making plays a decisive role in determining the effectiveness of the strategy and the overall European capacity to achieve its goals. Our analysis has proved the intuitive idea that much of the variation in performances across countries depends on the quality of governance at national level.

The role of social capital, then, appears as particularly strong. More cohesive societies are also those who are better equipped to pursue a broad development strategy. A strategy based on several pillars, whose scope goes well beyond the strict concept of GDP growth,

seems to require a high level of social capital, measured by its component of interpersonal trust.

These results also find support in previous analyses (Easterly 2002; Rodrik 2003; Dixit 2009), which suggested that the quality of institutions becomes more decisive for higher levels of development, which is a particularly interesting suggestion for our case of a developing strategy for a group of developed economies, like the MS of the EU.

Others, like Gros and Roth (2012), specifically mentioned the relevance of institutional factors for the Europe 2020 Strategy. They argued that it can be best achieved with appropriate and sufficiently investment in human and social capital and with efficient government institutions. They claim that the quality of the institutions is more important than other factors, and that "a sufficient level of government effectiveness throughout the EU-27 is a critical condition for making the EU as a whole more competitive", even arguing that "a clear implication would be that the structural funds should be used to build social capital and effective institutions rather than airports and highways" (Gros and Roth 2012).

7 Conclusions

The inherent complexity of the Europe 2020 Strategy, focused on areas where the European Commission has not full jurisdictional competence, increases the relevance of a timely and precise monitoring system and of an effective and efficient institutional setting. A supranational strategy so dependent on initiatives and actions by national governments requires a strong monitoring mechanism and a high degree of accountability for the Member States. In order to achieve the best possible results, it is important to understand which are the key factors determining countries' performances. This paper makes contributions in both directions.

The Europe 2020 Index represents a powerful tool to monitor the performances of the MS of the EU towards the achievements of the goals of the strategy, as defined by the eight official headline indicators. The index allows a yearly monitoring and can already be built for ten consecutive years, since 2003. We observe certain differences in performances, both between countries and across time. The need for a better understanding of the determinants of those differences inspired an analysis of potential success factors, such as level of wealth, growth, sustainability of public finances and institutions.

We look at the institutional economics literature in search of explanation, because we thought that such a wide, supranational, complex strategy characterised by multilevel governance, need for continuous political commitment, and policy areas falling beyond the strict competences of the European Commission, would require something more than the coordination of economic policies. We thought that institutions, in the sense of North (1991), could be the key explanatory variables, and decided to test both measures of formal and informal institutions, against the economic criteria based on GDP.

The econometric analysis performed in the paper confirmed the key importance of formal and informal institutions, both in absolute and in relative terms, compared with the other factors considered. Institutional variables are the most significant ones and have the strongest estimated effects. The results do not imply that economic growth, levels of GDP per capita, and fiscal sustainability are not important objectives per se. The main policy implication of our analysis would be that in order for the goals of the Europe 2020 Strategy

to be achieved, policy making should adopt a broader focus including the role of institutions.

Conflict of interest   The authors declare that they have no conflict of interest.

References

Abreu, D. (1988). On the theory of infinitely repeated games with discounting. *Econometrica, 56*(2), 383–396.

Acemoglu, D., Johnson, S., & Robinson, J. (2001). The colonial origins of comparative development: An empirical investigation. *American Economic Review, 91*(5), 1369–1401.

Acemoglu, D., Johnson, S., Robinson, J., & Thaicharoen, Y. (2003). Institutional causes, macroeconomic symptoms: Volatility, crises and growth. *Journal of Monetary Economics., 50*(1), 49–123.

Acemoglu, D., & Robinson, J. (2010). The role of institutions in growth and development. *Review of Economics and Institutions*, Vol. 1. No. 2, Fall 2010.

Adams-Kane, J., & Lim, J. J. (2014). Institutional quality mediates the effect of human capital on economic performance. *World Bank Policy Research Working Paper*, (6792).

Afonso, A., Gomes, P., & Rother, P. (2007) What 'Hides' behind sovereign debt ratings? *ECB working paper* No.711.

Alfaro, L., Kalemli-Ozcan, S., & Volosovych, V. (2005). Why doesn't capital flow from rich to poor countries? An empirical investigation. *NBER Working Paper*, (w11901).

Anderson, J. E., & Marcouiller, D. (2002). Insecurity and the pattern of trade: An empirical investigation. *Review of Economics and Statistics, 84*, 342–352.

Arrow, K. (1972). Gifts and exchanges. *Philosophy & Public Affairs, 1*, 343–362.

Azfar, O., & Gurgur, T. (2005). Government effectiveness, crime rates and crime reporting. *Crime Rates and Crime Reporting* (May 10, 2005).

Beugelsdijk, S., De Groot, H. L., & Van Schaik, A. B. (2004). Trust and economic growth: A robustness analysis. *Oxford Economic Papers, 56*(1), 118–134.

Bjørnskov, C. (2003). The happy few: Cross–country evidence on social capital and life satisfaction. *Kyklos, 56*(1), 3–16.

Blume, L., & Voigt, S. (2013). The economic effects of constitutional budget institutions. *European Journal of Political Economy*, 29(C), 236–251.

Bourdieu, P. (1986). Forms of capital. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–260). Westport, CT: Greenwood Press.

Brüderl, J., & Preisendörfer, P. (1998). Network support and the success of newly founded businesses. *Small Business Economics, 10*, 213–225.

Buiter, W. H., Corsetti, G., & Roubini, N. (1993). *Excessive deficits: Sense and nonsense in the treaty of Maastricht*. No: Economic Policy. 1.

Chang, H. J. (2011). Institutions and economic development: Theory, policy and history. *Journal of Institutional Economics, 7*(4), 473.

Clarke, G. R. (2001). How institutional quality and economic factors impact technological deepening in developing countries. *Journal of International Development, 13*(8), 1097–1118.

Coase, R. H. (1937). The nature of the firm. *Economica, 4*(16), 386–405.

Coase, R. H. (1984). The new institutional economics. *Journal of Institutional and Theoretical Economics, 140*(1), 229–231.

Coase, R. (1998). The new institutional economics. *The American Economic Review, 88*(2), 72–74.

Cole, H. L., Mailath, G. J., & Postlewaite, A. (1992). Social norms, savings behavior, and growth. *Journal of Political Economy*, 100(6), 1092–1125.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94, S95–S120.

Commons, J. R. (1931). Institutional economics. *American Economic Review*, 21, 648–657.

Dakhli, M., & De Clercq, D. (2004). Human capital, social capital, and innovation: A multi-country study. *Entrepreneurship & Regional Development, 16*, 107–128.

Delors, J. (2013). Economic Governance in the European Union: Past, present and future. *JCMS: Journal of Common Market Studies, 51*(2), 169–178.

Dixit, A. (2009). Governance, institutions and economic activity. *American Economic Review, 99*(1), 3–24.

Djankov, S., LaPorta, R., Lopez-de-Silanes, F., & Shleifer, A. (2002). The regulation of entry. *Quarterly Journal of Economics, 117*(1), 1–37.

Dollar, D., & Kraay, A. (2003). Institutions, Trade and Growth. *Journal of Monetary Economics, 50*(1), 133–162.

Dornbusch, R. (1996). Debt and monetary policy: The policy issues (No. 5573). *NBER.*

Dornbusch, R. (1997). Fiscal aspects of monetary integration. *American Economic Review, 87*(2), 221–223.

Easterly, W. (2002). The elusive quest for growth: Economists' adventures and misadventures in the tropics. *Journal of Macromarketing, 22*(1), 136–144.

Erixon, F. (2010). The Europe 2020 Strategy: Time for Europe to think again. *European View, 9*(1), 29–37.

Fukuyama, F. (1995). *Trust: The social virtues and the creation of prosperity.* New York: Free Press.

Glaeser, E. L., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2004). Do institutions cause growth? *Journal of Economic Growth, 9*(3), 271–303.

Glaeser, E. L., Laibson, D., & Sacerdote, B. (2002). An economic approach to social capital. *The Economic Journal, 112*(483), F437–F458.

Greenspan, A. (2007). *The age of turbulence.* New York: Penguin Books.

Greif, A. (1993). Contract enforceability and economic institutions in early trade: The Maghribi traders' coalition. *American Economic Review, 83*(3), 525–548.

Gros, D., & Roth, F. (2012). The Europe 2020 strategy: Can it maintain the EU's competitiveness in the world? (No. 7260). *CEPS.*

Hall, R. E., & Jones, C. I. (1999). Why do some countries produce so much more output per worker than others? *The Quarterly Journal of Economics, 114*(1), 83–116.

Helliwell, J. F., Barrington-Leigh, C. P., Harris, A., & Huang, H. (2009) International evidence on the social context of well-being (No.w14720). *NBER.*

Hodgson, G. M. (1998). The approach of institutional economics. *Journal of Economic Literature, 36*, 166–192.

Inglehart, R. (1999). Trust, well-being and democracy. In M. Warren (Ed.), *Democracy and trust* (pp. 88–120). Cambridge: Cambridge University Press.

Karlan, D. S. (2005). Using experimental economics to measure social capital and predict financial decisions. *American Economic Review, 95*(5), 1688–1699.

Kaufmann, D., Kraay, A., & Mastruzzi, M. (2010). The worldwide governance indicators: Methodology and analytical issues. *World Bank Policy Research* Working Paper No. 5430.

Knack, S., & Keefer, P. (1997). Does social capital have an economic payoff? A cross-country investigation. *The Quarterly Journal of Economics, 112*(4), 1251–1288.

Kreps, D. M., Milgrom, P., Roberts, J., & Wilson, R. (1982). Rational cooperation in the finitely repeated prisoner's dilemma. *Journal of Economic Theory, 27*, 245–252.

Kurtz, M. J., & Schrank, A. (2007). Growth and governance: Models, measures, and mechanisms. *Journal of Politics, 69*, 538–554. doi:10.1111/j.1468-2508.2007.00549.x.

Kyriacou, A. P., & Roca-Sagalés, O. (2011). Fiscal decentralization and government quality in the OECD. *Economics Letters, 111*(3), 191–193.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1997). Legal determinants of external finance. *Journal of Finance, 52*(3), 1131–1150.

Lambsdorff, J. G. (2003). How corruption affects persistent capital flows. *Economics of Governance, 4*(3), 229–243.

Lee, S. Y., & Whitford, A. B. (2009). Government effectiveness in comparative perspective. *Journal of Comparative Policy Analysis, 11*(2), 249–281.

Levchenko, A. A. (2004) Institutional Quality and International Trade, *IMF Working papers.*

Magalhães, P. C. (2014). Government effectiveness and support for democracy. *European Journal of Political Research, 53*, 77–97. doi:10.1111/1475-6765.12024.

Mauro, P. (1995). Corruption and growth. *Quarterly Journal of Economics, 110*, 681–712.

North, D. C. (1991). Institutions. *Journal of Economic Perspectives., 5*(1), 97–112.

North, D. C. (1993). The new institutional economics and development. EconWPA Economic History, (9309002).

OECD. (2001). *The Well-being of Nations.* The Role of Human and Social Capital. Paris: OECD.

Olson, M. (1982). *The rise and decline of nations.* New Haven: Yale University Press.

Ostrom, E. (1999). Social capital: A fad or a fundamental concept? In P. Dasgupta & I. Serageldin (Eds.), *Social capital. A multifaceted perspective.* Washington, DC: The World Bank.

Parada, J. J. (2001). Original institutional economics: A theory for the 21st century? *Oeconomicus, 5*, 46–60.

Pasimeni, P. (2011). The Europe 2020 Index. *Social Indicators Research, 110*(2), 613–635. doi:10.1007/s11205-011-9948-9.

Pasimeni, P. (2012). Measuring Europe 2020: A new tool to assess the strategy. *International Journal of Innovation and Regional Development, 4*(5), 365–385.

Pugno, M. & Verme, P. (2012) Life satisfaction, social capital and the bonding-bridging nexus. *World Bank Working Papers*, 5945.

Putnam, R. D. (1993). *Making democracy work*. Civic traditions in modern Italy: Princeton University Press.

Putnam, R. D. (2000) *Bowling alone: The collapse and revival of American community*. Simon and Schuster.

Rodrik, D. (Ed.). (2003). *In search of prosperity: Analytic narratives on economic growth*. Princeton University Press.

Rodrik, D. (2008). *One economics, many recipes: Globalization, institutions, and economic growth*. Princeton: Princeton University Press.

Rodrik, D., Subramanian, A., & Trebbi, F. (2004). Institutions rule: The primacy of institutions over geography and integration in economic development. *Journal of Economic Growth, 9*(2), 131–165.

Rose, Richard. (2000). How much does social capital add to individual health? A survey study of Russians. *Social Science and Medicine, 51*, 1421–1435.

Rosenberg, M. (1956). Misanthropy and political ideology. *American Sociological Review, 21*(6), 690–695.

Sabatini, F. (2008). Social capital and the quality of economic development. *Kyklos, 61*(3), 466–499.

Sabatini, F. (2009). Social capital as social networks: A new framework for measurement and an empirical analysis of its determinants and consequences. *The Journal of Socio-Economics, 38*(3), 429–442.

Sachs, J. D., & Warner, A. M. (1997). Fundamental sources of long-run growth. *American Economic Review, 87*(2), 184–188.

Sarcinelli, M. (2010). 'Europa 2020', Nuovo Governo Economico e Ri-Regolamentazione Finanziaria: Incentivi o Vincoli Alla Crescita? *Moneta e Credito, 63*(252), 285–319.

Serageldin, I., & Grootaert, C. (2000). Defining social capital: An integrated view. In P. Dasgupta & I. Serageldin (Eds.), *Social capital. A multifaceted perspective*. Washington, DC: The World Bank.

Sobel, J. (2002). Can we trust social capital? *Journal of Economic Literature*, *40*(1), 139–154.

Toya, H., & Skidmore, M. (2012) Do natural disasters enhance societal trust? (No.3905). *CESifo Working Paper*.

Uslaner, E. M. (2003). Trust, democracy and governance: Can Government Policies Influence Generalized Trust? In M. Hooghe & D. Stolle (Eds.), *Generating social capital: Civil society and institutions in comparative perspective* (pp. 171–190). New York: Palgrave Macmillan.

Veblen, T. (1898). Why is economics not an evolutionary science? *The Quarterly Journal of Economics, 12*(4), 373–397.

Williamson, O. E. (1975). *Markets and hierarchies*. New York, pp. 26–30.

Williamson, O. E. (2000). The new institutional economics: Taking stock, looking ahead. *Journal of Economic Literature*, *38*, 595–613.

Wilson, W. J. (1987). *The truly disadvantaged*. Chicago: University of Chicago Press.

Woolcock, M. (1998). Social capital and economic development: Toward a theoretical synthesis and policy framework. *Theory and Society, 27*(2), 151–208.

Zak, P. J., & Knack, S. (2001). Trust and growth. *Economic Journal, 111*, 295–331.

Shleifer, R. and Vishny, R.W. (1993) 'Corruption', *Quarterly Journal of Economics*, Vol. 108, No. 3, pp.599–617.

Transparency International (2010) *Corruption Perception Index*, available at http://www.transparency.org/policy_research/surveys_indices/cpi/2010 (accessed on 30 January 2012).

Notes

1　Produced annually by countries of the euro-zone (stability programmes) and other EU countries (convergence programmes) under the Stability and Growth Pact. The aim is to ensure more rigorous budgetary discipline through surveillance and coordination of budgetary policies. In line with the European Semester designed to coordinate economic policy-making in EU countries, the programmes are submitted simultaneously with NRPs in April each year, thus before government adoption of national budgets for the following year, and will provide for meaningful discussions on fiscal policy.

2　Available at http://www.epp.eurostat.ec.europa.eu/portal/ page/portal/europe_2020_indicators/headline_indicators.

3　Data from Eurostat, last extraction: 05 January 2012.

4　It defines globalisation as the process of creating networks of connections among actors at multi-continental distances, mediated through a variety of flows including people, information and ideas, capital and goods. Globalisation is conceptualised as a process that erodes national boundaries, integrates national economies, cultures, technologies and governance and produces complex relations of mutual interdependence. More specifically, the three dimensions of the KOF index are defined as: economic globalisation, characterised as long distance flows of goods, capital and services as well as information and perceptions that accompany market exchanges; political globalisation, characterised by a diffusion of government policies; and social globalisation, expressed as the spread of ideas, information, images and people. It uses a linear aggregation method.

5　The index is built on 90 variables, of which two thirds come from the Executive Opinion Survey, and one third comes from publicly available sources such as the United Nations. The variables are organised into 9/12 pillars, with each pillar representing an area considered as an important determinant of competitiveness. The GCI separates countries into three specific stages: factor-driven, efficiency-driven, and innovation-driven, each implying a growing degree of complexity in the operation of the economy. The GCI applies a linear aggregation method.

6　The indicators are a compilation of the perceptions of different groups of respondents, collected in large number of surveys and cross-country assessments of governance. Some of these instruments capture the views of firms, individuals, and public officials in the countries being assessed. Others reflect the views of NGOs and aid donors with considerable experience in the countries being assessed, while others are based on the assessments of commercial risk-rating agencies.

5 Assessing the Europe 2020 strategy

Paolo Pasimeni

Introduction

The art of government is a particularly complex one. Public policies are subject to more or less scrutiny, to a higher or lower level of accountability, and to a more or less stringent need to assess their success or failure. In any case one of the main questions in public policy is how to monitor and evaluate the results. The broader the scope of the policy, the more complex the task of evaluating it.

Thanks to an unprecedented abundance of new statistics, indicators, and data, we can today move towards a better measurement and analysis of public policies. Statistics can help us concentrate the complexity of government intervention into meaningful and relevant information for policy makers and citizens.

The evaluation of public policies has become a democratic requirement to ensure the transparency and objectivity of policy making, and timely and appropriate statistics are increasingly used by citizens to evaluate political decisions and the politicians who support them. Adequate statistics are therefore indispensable.

As the conference of the Directors General of the National Statistical Institutes (DGINS) recognized in the famous Sofia Memorandum of September 2010, "there is a growing societal and political demand to measure progress, well-being and sustainable development in a more comprehensive way."

This recognition of the need for a broader approach to the monitoring and evaluation of public polices guided the conception of the main development strategy for the current decade in the European Union (EU): the Europe 2020 Strategy, launched in March 2010. It was the result of a political consensus among the governments of 27 Member States (MS) to address the main structural challenges of the EU.[1]

Three priorities were identified as main pillars of the Europe 2020 strategy to "offer a vision of Europe's social market economy for the 21st century":

- *Smart growth* – developing an economy based on knowledge and innovation.
- *Sustainable growth* – promoting a more resource efficient, greener, and more competitive economy.
- *Inclusive growth* – fostering a high-employment economy delivering economic, social, and territorial cohesion (European Commission 2010).

The key deliveries for the Europe 2020 Strategy at the national level are the so-called "National Reform Programmes" (NRPs), which are to be presented by the national governments in April of each year, along with the stability and convergence programmes. NRPs contain national targets relating to EU-wide headline targets and explain how governments intend to meet them and overcome obstacles to growth. They also set out what measures will be taken, when, by whom, and with what budget implications.

The new initiative tries to overcome one of the main weaknesses of the Lisbon Strategy: the lack of a comprehensive system of monitoring of the performance achieved by the Member States towards the common objectives (Martens 2010). Both the Lisbon and the Europe 2020 Strategies based their governance structure on a coordinated action approach, among member states (MS) and the European Institutions.

One of the main reasons why these supranational strategies may fail to reach their objectives is that some of the main policy areas they focus on fall outside the EU's legal competence. Most of the core Lisbon targets, for instance, concerned areas where the EU does not have any jurisdictional competence (Erixon 2010). Political action at the national level, then, could determine the effectiveness of the strategy.

A second reason often presented to explain why the Lisbon Strategy did not actually deliver the expected results relates to the lack of an appropriate system of monitoring and evaluation of performance, based on clear, punctual, and precise indicators. The risk for the Europe 2020 Strategy was to maintain these inherent strategic weaknesses in its architecture (Sarcinelli 2011).

In the preparation of this new strategy, therefore, there was the conviction that a verifiable progress could only be made if the related policy assessments were grounded in an indicator-based analysis. For this reason a set of eight indicators, with targets and expected results, was proposed and accepted for the Member States.

Some attempts have been made in the literature to use these indicators to study the preliminary results of the strategy. It is clear that a supranational strategy so dependent on initiatives and actions by individual governments requires a stronger monitoring mechanism and more accountability among member states.

The great complexity of this strategy is strictly linked to the very peculiar arrangements of the EU (Jachtenfuchs 2010). One of the key features of the European integration has been the dilution of national sovereignty through collective decision-making and supranational institutions. The concept of multilevel governance (Hooghe and Marks 2010) has emerged as a tool to understand the inter-relationship within and between different levels of governance and government.

The key problem, for our purposes, refers to the fact that multilevel governance risks leading to a deficit in democratic accountability (Papadopoulos 2010). Moreover, there is a problem of effectiveness for a strategy agreed upon at the supranational level, but whose main policy leverages are mainly anchored at the national level.

The role of the national governments will be decisive in determining the success or failure of the strategy. Consequently the need to enhance accountability implies a stronger effort towards the evaluation of policy actions implemented at the national level. The set of agreed indicators is fundamental to ensure that a proper monitoring system is put in place and the measurement of performance is timely.

As Martens (2010) noted, the official Europe 2020 framework

> still leaved [sic] open essential operational questions, such as the link between the evaluation of states' performance under this strategy and the monitoring done under the SGP, or the creation of more concrete mechanisms of economic governance that will complement national efforts.

The contribution that this work intends to bring goes precisely in this direction, aiming at strengthening the evaluation of member states' performances in the strategy. I develop a synthetic composite index to quantify, measure, and monitor progress achieved by countries in the strategy. I will then use this index to study which factors are more likely to determine success or failure in the progress towards the achievements of the strategy's goals.

I will also use the index to study which factors are more likely to determine success or failure in the Europe 2020 Strategy, measuring the relative importance of economic and institutional factors. The next section presents the index, develops it for ten years (2003 to 2012), and monitors the different performances of the MS. Section 3 presents the current policy context, while section 4 explains the theoretical foundations of the institutional economics hypothesis. Section 5 presents the econometric analysis and results, which are discussed in section 6. Section 7, finally, concludes.

The Europe 2020 Index

When the Europe 2020 strategy was launched, three dimensions of growth were identified as main pillars of this strategy and they were associated to a set of indicators to assess the progress towards the objectives and also for purposes of comparison. I build a specific index for each of the three main dimensions of the Europe 2020 strategy and develop a synthetic "Europe 2020 Index" to allow a quantification of the relative position of each member state towards the objectives of the strategy. This index seeks to give a concrete form to this policy initiative, in a way that accounts for the different dimensions and policy priorities, and in a manner that allows quantification and monitoring of its progress.

The eight indicators proposed by the European Commission to monitor the Europe 2020 strategy are:

- Tertiary education attainment (TEDU) (2000–2013)
- Gross domestic expenditure on R&D (GERD) (1990–2012)
- Greenhouse gas emissions (GGE) (1990–2012)

- Share of renewable energy in gross final energy consumption (RNEW) (2003–2012)
- Energy intensity of the economy (EINT) (1990–2012)
- Employment rate of the population aged 20 to 64 (EMPL) (1992–2013)
- Early leavers from education (SCHO) (1992–2012)
- Population at-risk-of-poverty or exclusion (POV) (2003–2012)

They are calculated at the national level by Eurostat and their detailed definitions and explanations are presented in Annex 1. Three thematic indices can be created by grouping these indicators, reflecting the three main pillars of the Europe 2020 strategy: the Smart Growth Index (SMGI), the Sustainable Growth Index (SUGI), and the Inclusive Growth Index (INGI), which in turn form the Europe 2020 Index. I decide to link each indicator to only one dimension of the strategy. So tertiary education attainment (TEDU) and gross expenditures on R&D (GERD) are considered the main drivers of the Smart Growth dimension; greenhouse gas emissions (GGE), the share of renewable energy (RNEW), and the energy intensity of the economy (EINT) are the components of the Sustainable Growth dimension; and employment rate (EMPL), the rate of early school leavers (SCHO) and the share of the population at risk of poverty or social exclusion (POV) determine the Inclusive Growth Index. Figure 5.1 shows the structure of the Index.

Eurostat extracts the data used and at the moment the largest common period for which all of them are available is from 2003 to 2012. The eight indicators are presented in different units and scales. The first step to make them comparable, so that they can be aggregated, is to normalize them, in a way that all the values are comprised between one and zero. For "positive" indicators, like TEDU, GERD, RNEW and EMPL, I apply:
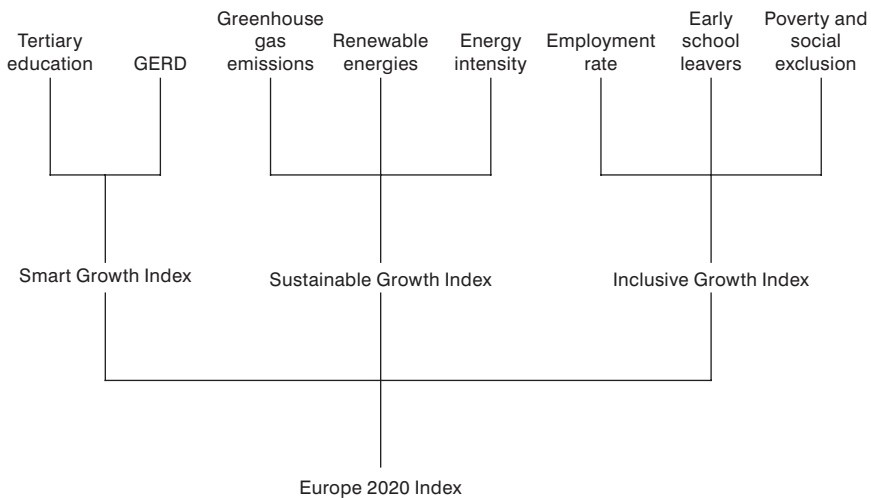

Figure 5.1 Structure of the Europe 2020 Index.

$$X_{ic} = \frac{x_{ic} - \min_k \{x_{ik}\}}{\max_k \{x_{ik}\} - \min_k \{x_{ik}\}} \tag{5.1}$$

where *i* is the indicator (TEDU, GERD, RNEW, or EMPL), *c* the country, and $\max_k$ and $\min_k$ are the maximum and minimum value of that indicator across the whole period available. For "negative" indicators, those for which a higher value represents worse performance, like GGE, EINT, SCHO, and POV, I apply:

$$X_{ic} = \frac{\max_k \{x_{ik}\} - x_{ic}}{\max_k \{x_{ik}\} - \min_k \{x_{ik}\}} \tag{5.2}$$

where *i* is the indicator (GGE, EINT, SCHO, or POV), *c* the country, and $\max_k$ and $\min_k$ are the maximum and minimum value of that indicator across the whole available time series.

The normalized indicators can now be aggregated in order to build the three indices. These, in turn, can be further aggregated to produce the synthetic Index. In the aggregation, I use equal weights, giving the same relevance to all the components of the index. The three sub-indices represent three major pillars of the Europe 2020 Strategy, and they have been conceived as equally important. The indicators that compose each sub-index are also equally weighted, in order not to give any priority to one or another. I use a geometric aggregation method, instead of the linear one: the main difference is that by aggregating indicators through a geometric mean, high differences between the values of the components are taken into account and "penalized," with respect to a series with more homogeneous values for its components. The geometric mean accounts for the deviation from the average and satisfies the property of interval-scale unit comparability, while the arithmetic one does not (Ebert and Welsch 2004).[2]

In other words, for our purposes of cross-country comparison, choosing the geometric method means rewarding those countries presenting more equilibrated values of the three main components of the Index, i.e. including a mechanism

Table 5.1 Descriptive statistics of the normalized indicators

Indicator	Max.	Min.	Average	Median	Standard deviation
GERD	0.951	0.008	0.327	0.275	0.237
TEDU	1.000	0.034	0.547	0.550	0.244
GGE	0.985	0.001	0.570	0.565	0.238
RNEW	0.786	0.002	0.206	0.147	0.169
EINT	1.000	0.001	0.808	0.892	0.184
EMPL	0.853	0.266	0.591	0.599	0.132
SCHO	0.992	0.089	0.803	0.835	0.153
POV	0.962	0.130	0.775	0.809	0.161

to reward more balanced profiles of development. Therefore the formula[3] to be applied is:

$$I_g = \left(\overset{n}{\underset{i=1}{\tilde{O}}} X_i \right)^{\frac{1}{n}} \qquad (5.3)$$

The first aggregation generates the three sub-indices, corresponding to the three main pillars of the strategy (smart, sustainable, and inclusive). Figure 5.2 shows the Europe 2020 profiles for the six biggest countries, in terms of population, of the EU. France and Germany have similar values in all the three dimensions, similar to the UK, which differs from the other two only for the "sustainability" dimension, where it performs lower than the other countries. Spain and Italy show similar profiles, with Italy slightly exceeding Spain in the "sustainable" and "inclusive growth" dimensions, but Spain performs much better in the "smart growth" dimension. Poland has a profile that is close to the Italian one, performing a bit better in the INGI and SMGI, and a bit worse in the SUGI.

The second aggregation generates the overall Europe 2020 Index. This instrument allows a yearly monitoring of the progress made by each country. With the last data available[4] the three sub-indices and the index can be built for ten consecutive years from 2003 to 2012.
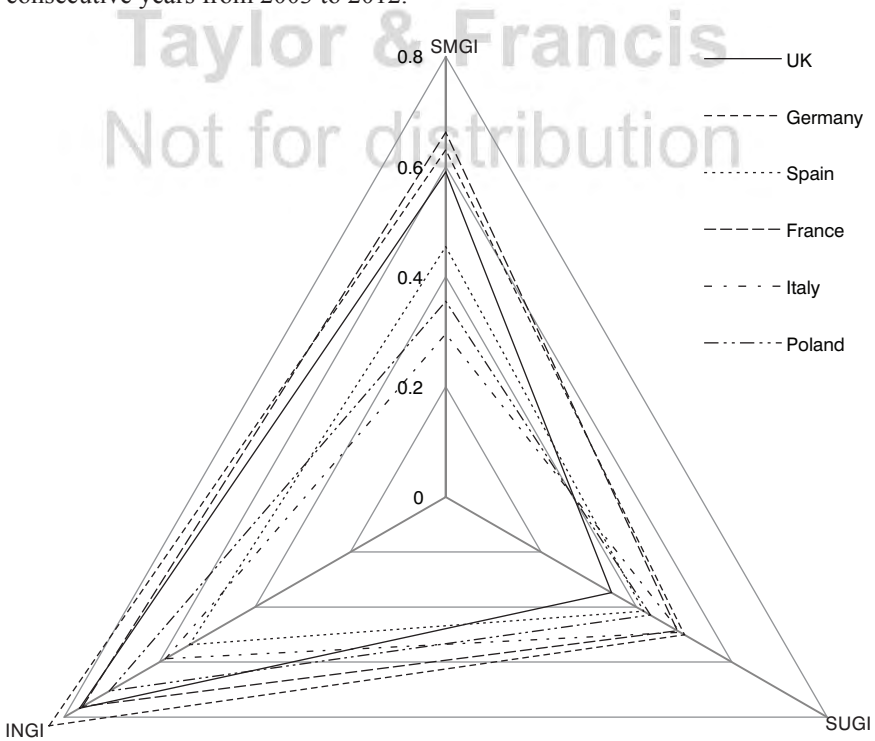

Figure 5.2 Profile of the six biggest countries.

Table 5.2 Europe 2020 Index overall score (2003–2012)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium	0.445	0.445	0.456	0.476	0.490	0.503	0.530	0.540	0.547	0.571
Bulgaria	0.133	0.231	0.236	0.254	0.273	0.324	0.349	0.355	0.339	0.359
Czech Rep	0.355	0.356	0.366	0.378	0.396	0.417	0.444	0.468	0.504	0.540
Denmark	0.643	0.655	0.671	0.664	0.661	0.688	0.714	0.712	0.725	0.744
Germany	0.513	0.523	0.530	0.540	0.560	0.572	0.601	0.606	0.624	0.640
Estonia	0.453	0.462	0.491	0.530	0.527	0.557	0.572	0.588	0.651	0.647
Ireland	0.391	0.414	0.424	0.437	0.454	0.476	0.510	0.509	0.521	0.532
Greece	0.327	0.331	0.342	0.349	0.354	0.354	0.364	0.378	0.386	0.390
Spain	0.390	0.377	0.382	0.405	0.407	0.442	0.466	0.479	0.474	0.466
France	0.558	0.557	0.563	0.571	0.581	0.593	0.613	0.612	0.609	0.626
Italy	0.336	0.338	0.350	0.365	0.377	0.392	0.409	0.417	0.426	0.441
Cyprus	0.261	0.264	0.272	0.278	0.261	0.192	0.300	0.325	0.335	0.351
Latvia	0.341	0.360	0.393	0.432	0.458	0.467	0.428	0.458	0.497	0.510
Lithuania	0.412	0.451	0.476	0.498	0.504	0.519	0.519	0.514	0.546	0.563
Luxembourg	0.343	0.382	0.418	0.423	0.457	0.474	0.508	0.491	0.492	0.502
Hungary	0.341	0.343	0.346	0.365	0.379	0.397	0.425	0.435	0.452	0.472
Malta	0.085	0.151	0.159	0.186	0.179	0.183	0.187	0.197	0.229	0.252
Netherlands	0.469	0.454	0.471	0.486	0.498	0.516	0.533	0.524	0.549	0.564
Austria	0.538	0.542	0.553	0.567	0.580	0.597	0.626	0.624	0.629	0.654
Poland	0.279	0.302	0.320	0.335	0.357	0.385	0.417	0.430	0.445	0.476
Portugal	0.318	0.322	0.329	0.367	0.401	0.442	0.465	0.485	0.505	0.507
Romania	0.213	0.240	0.261	0.281	0.309	0.345	0.336	0.342	0.359	0.368
Slovenia	0.481	0.504	0.503	0.527	0.535	0.540	0.580	0.602	0.626	0.651
Slovakia	0.268	0.270	0.285	0.294	0.309	0.322	0.344	0.388	0.409	0.433
Finland	0.693	0.707	0.734	0.727	0.737	0.762	0.772	0.754	0.769	0.777
Sweden	0.734	0.744	0.771	0.792	0.802	0.822	0.834	0.819	0.836	0.849
UK	0.442	0.423	0.437	0.453	0.462	0.482	0.509	0.514	0.534	0.540

Countries are listed alphabetically in their original languages, as the official EU alphabetical ranking prescribes

All the countries have improved their scores in the reference period, for which all the data are available. There is, however, some change in these trends, for instance Latvia in 2009 suffered an abrupt worsening of the overall index, mainly driven by the "inclusive growth sub-index," due to the critical deterioration of its employment rate, as a consequence of the crisis. The same happened to Cyprus in 2008, when the "sustainable growth sub-index" registered an abrupt fall, driven

Table 5.3 Europe 2020 Index overall ranking (2003–2012)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium	10	11	11	11	11	11	10	9	10	9
Bulgaria	26	26	26	26	25	24	23	24	25	25
Czech Rep	15	17	17	17	18	18	17	17	15	13
Denmark	3	3	3	3	3	3	3	3	3	3
Germany	6	6	6	6	6	6	6	6	7	7
Estonia	9	8	8	7	8	7	8	8	4	6
Ireland	13	13	13	13	15	13	12	13	13	14
Greece	20	20	20	21	22	22	22	23	23	23
Spain	14	15	16	16	16	16	15	16	18	20
France	4	4	4	4	4	5	5	5	8	8
Italy	19	19	18	20	20	20	21	21	21	21
Cyprus	24	24	24	25	26	26	26	26	26	26
Latvia	18	16	15	14	13	15	18	18	16	15
Lithuania	12	10	9	9	9	9	11	11	11	11
Luxembourg	16	14	14	15	14	14	14	14	17	17
Hungary	17	18	19	19	19	19	19	19	19	19
Malta	27	27	27	27	27	27	27	27	27	27
Netherlands	8	9	10	10	10	10	9	10	9	10
Austria	5	5	5	5	5	4	4	4	5	4
Poland	22	22	22	22	21	21	20	20	20	18
Portugal	21	21	21	18	17	17	16	15	14	16
Romania	25	25	25	24	23	23	25	25	24	24
Slovenia	7	7	7	8	7	8	7	7	6	5
Slovakia	23	23	23	23	24	25	24	22	22	22
Finland	2	2	2	2	2	2	2	2	2	2
Sweden	1	1	1	1	1	1	1	1	1	1
UK	11	12	12	12	12	12	13	12	12	12

Countries are listed alphabetically in their original languages, as the official EU alphabetical ranking prescribes

by the peak in greenhouse gas emissions the country had in that year. Since then the situation has constantly improving.

At the same time we observe some outstanding relative performances throughout the period, like Bulgaria, Poland, and to a certain extent also Malta, who are clearly catching up, though starting from lower levels. We also significantly see Estonia in the last few years for which data are available. In 2011 the Baltic country managed to considerably increase its relative performance and jumped

four places up in the ranking, to number four. In the last two years, we observe a significant decrease in the score of Spain, mainly driven by the "inclusive growth sub-index," due to the dramatic fall in employment levels.

In Table 5.3 we can actually observe how relative positions have changed throughout the period considered. Some countries have lost ground; notably Spain lost six positions and France four, followed by Greece, which lost three. Others, instead, have remarkably improved their position, in particular Estonia, Latvia, Poland, and Portugal, which are clearly catching up throughout the period. The Estonian exploit in the index is mainly due to the "smart growth sub-index," driven by an important increase (+46 per cent) of the gross domestic expenditure on R&D in 2011. The constant improvement of Poland in the index throughout the period was initially driven by a particularly strong improvement of the "inclusive growth" pillar until 2008, and by the "smart growth" one, since then. Portugal's positive performance has been driven by a steady increase in the tertiary education attainment and a considerable reduction in early school leaving. Falling employment rates, however, have slowed down its performance in the last years. The Latvian performance is positively influenced by a particularly high score in the "environmental sustainability" dimension, mainly due to the share of renewable energy in gross final energy consumption, where it is already well above the EU target for 2020.

Table 5.4 presents the values of the three sub-indices composing the Europe 2020 Index for the most recent year for which data are available. Sweden stands out as the first in all rankings, but most of the other Member States show more heterogeneous profiles, performing quite differently in the three dimensions of the strategy. We can observe great variation in the performances among countries and across time.

Policy context

The descriptive analysis based on the Europe 2020 Index allows a proper monitoring of the achievements of the Member States in the strategy. However it does not allow us to understand which factors determine these results, what helps improving performances and what causes divergences over time and between countries. The analysis will try to understand which factors are more likely to be associated with positive performances of the countries in the Europe 2020 Strategy.

The years since the Europe 2020 Strategy was launched have been intensely characterized by deep changes in the governance of the EU. The focus has been put on a new macroeconomic governance, for the Eurozone in particular, but not exclusively. A wide set of legislative acts has been agreed upon to reform the Stability and Growth Pact (Regulation (EU) 1175/2011 and 1177/2011), to prevent and correct macroeconomic imbalances (Regulation 1176/2011), to enforce measures that correct excessive macroeconomic imbalances in the euro area (Regulation 1174/2011), and to guarantee the effective budgetary surveillance in

Table 5.4 "Smart growth," "sustainable growth," and "inclusive growth" sub-indices (values and ranking, 2012)

SMGI (2012)			SUGI (2012)			INGI (2012)		
Sweden	0.870	1	Sweden	0.787	1	Sweden	0.895	1
Finland	0.865	2	Latvia	0.724	2	Netherlands	0.871	2
Denmark	0.758	3	Finland	0.653	3	Austria	0.846	3
Slovenia	0.693	4	Denmark	0.653	4	Czech Rep	0.835	4
France	0.662	5	Lithuania	0.621	5	Denmark	0.833	5
Belgium	0.657	6	Austria	0.614	6	Germany	0.832	6
Germany	0.630	7	Romania	0.597	7	Finland	0.831	7
Netherlands	0.629	8	Estonia	0.582	8	Luxembourg	0.805	8
Ireland	0.619	9	Portugal	0.522	9	Slovenia	0.787	9
Estonia	0.603	10	Slovenia	0.506	10	Estonia	0.773	10
UK	0.590	11	Germany	0.501	11	UK	0.768	11
Luxembourg	0.553	12	Italy	0.492	12	France	0.761	12
Austria	0.538	13	France	0.486	13	Slovakia	0.743	13
Spain	0.455	14	Slovakia	0.456	14	Cyprus	0.730	14
Czech Rep	0.420	15	Hungary	0.451	15	Belgium	0.725	15
Lithuania	0.405	16	Greece	0.450	16	Lithuania	0.709	16
Portugal	0.385	17	Czech Rep	0.448	17	Poland	0.705	17
Hungary	0.377	18	Poland	0.429	18	Latvia	0.663	18
Poland	0.355	19	Spain	0.415	19	Ireland	0.658	19
Italy	0.296	20	Bulgaria	0.408	20	Portugal	0.647	20
Latvia	0.277	21	Belgium	0.392	21	Hungary	0.619	21
Greece	0.254	22	Ireland	0.370	22	Malta	0.611	22
Cyprus	0.244	23	UK	0.348	23	Italy	0.587	23
Slovakia	0.239	24	Netherlands	0.328	24	Romania	0.555	24
Malta	0.233	25	Luxembourg	0.284	25	Spain	0.537	25
Bulgaria	0.219	26	Cyprus	0.242	26	Greece	0.520	26
Romania	0.151	27	Malta	0.113	27	Bulgaria	0.519	27

the euro area (Regulation 1173/2011, and to set the requirements of the budgetary framework for the Member States (Directive 2011/85EU).

The so-called "six-pack," the "two-pack," and the Treaty on Stability, Co-ordination and Governance in the Economic and Monetary Union (the "fiscal compact") have focused the EU policy-making on the main macroeconomic indicators, while at the same time the Europe 2020 Strategy remained the overarching strategy, setting the long-term objectives for the EU.

The importance of the economic growth and of the sustainability of public finance is central in the new macroeconomic architecture of the EU. The aim of this work is to understand how relevant they are in ensuring the success and sustainability of the Europe 2020 Strategy, and to disentangle their specific impact on countries' performances. In the analysis of the potential determinants of performances in the strategy, we take account of these factors, together with another set of indicators aiming at considering the role of institutions.

The level of general government gross debt and the general government deficit (or surplus) are key fiscal parameters, introduced already by the Maastricht Treaty. They were introduced as building criteria for the Economic and Monetary Union (EMU), and were considered necessary for its sustainability. For a review of the process conducting to the establishment of these parameters and for their macroeconomic significance, see Buiter et al. (1993), Dornbusch (1996, 1997) and Delors (2013). We test them in order to assess their importance in the strategy.

While none of the indicators of the Europe 2020 Strategy is based on the GDP, a good overall economic performance of the country could also determine good performance in the strategy. For this reason a measure of the GDP growth is introduced in the model to understand to what extent it influences the results.

We also observe from the data that many of the top performing countries, according to the index, happen to be relatively wealthier than the average. Richer countries might be better equipped to progress in the different dimensions of the strategy. In order to disentangle this possible effect, I introduce the measure of the GDP per capita, in purchasing power standards, into the model.

Another possible line of thought, instead, emphasises the role of institutions in promoting processes of development. The question of how institutions influence progress has long been central in the study of economic development (Veblen 1898; Commons 1931; Williamson 1975; Coase 1984; North 1991; Rodrik 2008, Dixit 2009). I include this perspective in the analysis, applied to the study of the Europe 2020 Strategy.

Institutions

The so-called "institutionalism" has become increasingly central in the economic literature (Coase 1998; Hodgson 1998; Williamson 2000; Parada 2001). It attempts to incorporate a theory of institutions into economics (North 1993).

Ronald Coase (1937) first introduced explicitly the notion of transaction costs into economic analysis. Oliver Williamson (1975) and Douglas North (1991) used the concept of reduction of transaction costs to explain why a more efficient institutional system promotes development by "creating order and reducing uncertainty." Since these seminal works, the role of institutions has been studied and recognized as central in the process of economic development.

North (1991: 97) defined institutions as "the rules of the game." They are "humanly devised constraints that structure political, economic and social interaction," and "they consist of both informal constraints, and formal rules" (North 1991: 97). Dixit (2009) highlighted "the structure and functioning of

the legal and social institutions that support economic activity and economic transactions by protecting property rights, enforcing contracts, and taking collective action to provide physical and organizational infrastructure" (North 1991, 5).

Many authors have studied the relationship between institutions and economic performances (Olson 1982; Knack and Keefer 1997; Hall and Jones 1999; Rodrik 2008; Acemoglu and Robinson 2010; Chang 2011). All of these studies focus on the effect of institutions on economic growth, on the level of investment, or on development.

Acemoglu and Robinson (2010) argued that institutions are the main determinants of differences in prosperity across countries; and in particular Acemoglu et al. (2003) suggested the existence of a "robust and strong effect of institutions on the volatility of economic activity," which in turn has strong implications for economic development.

Dollar and Kraay (2003) studied the relations between institutions and trade, finding that the good quality of the institutions was related to higher levels of trade and that both were particularly important in determining the growth prospects of countries. Rodrik et al. (2004) estimated the contribution of institutions, geography, and trade in determining income levels around the world, finding that the quality of institutions outranks by far all other factors.

Some authors (Chang 2011), on the other side, have criticized the dominant view of institutions as determinants of economic development, and have argued that an improvement in the quality of institutions might be the consequence of the process of economic development, mainly driven by a better human capital (Glaeser et al. 2004).

In order to study if and how formal and informal institutions can be associated with success or failure in the Europe 2020 Strategy, the distinction between formal and informal institutions must be introduced.

Formal institutions

Formal institutions are laws, rules, and mechanisms that define the system in which economic agents can operate. They include the constitutional rules of the political game, the legislature that makes specific regulations within this context, the courts, the police, as well as licensing and regulatory agencies, which interpret and enforce these rules.

Knack and Keefer (1997) suggest using property rights enforcements as main indicators of institutions; others look at measures of corruption (Mauro 1995), or at the levels of entry barriers (Djankov et al. 2002), as good proxies. Formal institutions are linked, in literature, to the concept of good governance.

The World Bank developed a set of indicators aimed at measuring all different aspects of good governance: the Worldwide Governance Indicators[5] (WGI) (Kaufmann et al. 2010). Their use in the economic literature is growing exponentially, in parallel with the greater focus on institutional factors as explanatory variables for the process of economic development.

These indicators are widely used, but they are also subject to some criticism, because they may suffer from perceptual biases, adverse selection in sampling, and conceptual conflation with economic policy choices (Kurtz and Schrank 2007), or because their construction is based on untested hypotheses (Glaeser et al. 2004). However, the need to operationalize the concept of institutional quality and to develop robust models to assess their relevance implies that these indicators currently are the best source of data to perform an institutional analysis of the process of economic development.

The analysis of institutions as a key element of good governance moved from the field of development economics, and was initially applied to the study of developing countries. Subsequently, however, it has been found relevant for developed countries as well, and this is of particular relevance for this work.

Sachs and Warner (1997) studied the relation between trade openness and institutional quality and found that such factors are particularly relevant to explain economic development in all countries, not just in developing ones. The role of good institutions is key in explaining the integration in international trade, in particular why rich countries trade with each other, but developing countries less so (Anderson and Marcouiller 2002). The idea that institutional differences are an important determinant of trade flows is confirmed by Levchenko (2004), who shows how countries with better institutions capture larger import shares in industries that are more "institutionally complex."

Institutional quality, moreover, is considered to be the prime determinant of capital flows and investment across countries (Lambsdorff 2003; Alfaro et al. 2005), it explains most variations in per capita incomes across countries (Acemoglu et al. 2001), and seems to be associated with higher investments in R&D (Clarke 2001) and lower volatility of macroeconomic policies (Acemoglu et al. 2003), which in turn leads to higher growth.

The concept of government effectiveness is the one on which we focus our attention. Among the governance indicators produced by the World Bank, government effectiveness tries to measure the general quality of public administration in one country, based on perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. We consider it as the most appropriate indicator to test the relevance of formal institutions in determining good performance in a wide, governmental, development agenda like the Europe 2020 Strategy.

Government effectiveness is found to be strictly associated with the existence of transparent budget rules (Blume and Voigt 2013), with higher levels of fiscal decentralization (Kyriacou and Roca-Sagalés 2011), and with better credit rating rates of sovereign debts (Afonso et al. 2007).[6] It leads to better social outcomes, like lower rates in some crime categories (Azfar and Gurgur 2005), and is the strongest macro-level predictor of support for democracy (Magalhães 2014).

According to Lee and Whitford (2009), much of the variation in the levels of government effectiveness is explained by national income, with wealthier

countries experiencing greater perceptions of effectiveness. But in a more recent analysis Adams-Kane and Lim (2014) reverse the causality link, arguing that it is government effectiveness affecting per capita income, and they identify human capital formation as the key channel. The quality of institutions, as measured by government effectiveness, is central to learning and education, and human capital is found to have a significant and positive effect on per capita income levels.

The literature on government effectiveness emphasizes the importance of having all the leverages of policymaking work in an institutional environment with a high quality of governance. This is why I use this indicator as a potential explanatory variable in the model.

Informal institutions

A fundamental question of political economy has been the impact that informal institutions shaping the organization of a society may have on the economic performance of countries (Cole et al. 1992: 1095; Sabatini 2008). "Features of social organization, such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated actions" (Putnam 1993: 167) are what is commonly referred to as "social capital."

The concept of social capital has often been prone to multiple interpretations, having multiple dimensions and possible effects (Serageldin and Grootaert 2000). Its definition has several variations across the social sciences (Bourdieu 1986; Coleman 1988; Putnam 1993; Fukuyama 1995; Woolcock 1998; Ostrom 1999; OECD 2001). In sociology and political science, the concept is often used as a property of organizations or countries, while in economics it is linked to the characteristics of individuals (Pugno and Verme 2012).

Economists have often used it to explain the role social interaction plays in promoting better functioning markets (Greif 1993). The literature on game theory, and in particular on repeated games, has highlighted at the microeconomic level how cooperation can be enhanced thanks to social capital (Kreps et al. 1982; Abreu 1988). Social connections can even sometimes substitute legal structures and produce the same effect of reducing transaction costs, as we have seen for formal institutions (Arrow 1972; Glaeser et al. 2002).

Informal institutions, synthesized by the concepts of social capital and trust, are extremely relevant even in the most advanced market economies (Dixit 2009), since "reputation and the trust it fosters are the core attributes of market capitalism" (Greenspan 2007: 256). As Arrow (1972: 357) pointed out: "Virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence."

The dimension of "trust" is considered to be the most important in explaining the economic function of social capital (Coleman 1988; Fukuyama 1995; Knack and Keefer 1997; Ostrom 1999; Zak and Knack 2001; Sabatini 2008), as an engine for enhanced efficiency and economic growth (Pugno and Verme 2012),

and as a key to overcoming market failures linked to the difficulty in enforcing or observing contracts (Karlan 2005). Most of the economic analyses of social capital use a generalized measure of interpersonal trust, as provided by the World Values Survey[7] (WVS) (Inglehart 1999; Sabatini 2009; Toya and Skidmore 2012).

The positive effect of social capital on growth and productivity has been highlighted by a very large body of literature (Fukuyama 1995; Knack and Keefer 1997; La Porta et al. 1997; Sobel 2002; Glaeser et al. 2002). Among these studies, it is worth highlighting the macro-econometric analysis by Knack and Keefer (1997), who found that an increase in the WVS measure of trust in one country increases economic growth too.

The same results, but on a wider sample, were found by Zak and Knack (2001), who argued that "growth rises by nearly 1 percentage point on average for each 15 percentage point increase in trust (a one standard deviation increase)" (Zak and Knack 2001: 307–309). They also argued that formal institutions may affect growth through their impact on trust: a better institutional setting is likely to enhance trust, thus reducing transaction costs and overcoming potential market failures, leading to higher growth. Beugelsdijk et al. (2004) tested the robustness of these results, finding that if the first analysis (Knack and Keefer 1997) could be considered as "limitedly robust," the Zak and Knack (2001) results, instead, are highly robust both in terms of the statistical significance of the estimated coefficients and in terms of the estimated effect sizes.

The literature on the effects of social capital, as measured by trust, suggests a series of positive effects: on trade (Greif 1993; Woolcock 1998), health (Putnam 2000; Rose 2000), school performance (Coleman 1988), entrepreneurship and innovation (Brüderl and Preisendörfer 1998; Dakhli and De Clercq 2003), the well-functioning of formal institutions (Williamson 2000), in terms of judicial efficiency, control of corruption and civic involvement (La Porta et al. 1997), crime prevention (Wilson 1987), and democratic stability (Inglehart 1999; Uslaner 2003). Social capital is also associated with higher reported levels of happiness (Uslaner 2003; Bjørnskov 2003), and life satisfaction (Helliwell et al. 2009; Pugno and Verme 2012).

Social capital, as measured by trust, seems to be the best variable to include the role of informal institutions into the model, and to test whether or not it is a key factor in determining the performances of EU countries.

Econometric analysis

The key question is how and to what extent the Europe 2020 Index is influenced by other measures and, if so, which are the most significant factors. The main hypothesis is that institutional factors might be the key explanatory variables, even more than the indicators of economic growth and public finances. For this reason we perform a set of multiple linear regression analyses.

The empirical strategy is to compose a large panel of 270 observations, covering 27 countries for ten years, from 2003 to 2012, which are those for which

the Europe 2020 Index can be calculated. The model has the Europe 2020 Index as the dependent variable (E2I).

Formal institutions are included in the model through the concept of good governance. The indicator of Government Effectiveness, from the World Governance Indicators,[8] is used as a measure of good governance. Informal institutions are included through the concept of social capital. I use the generalized measure of trust (Trust), from the World Values Survey,[9] as a proxy for social capital.

The indicators of sustainability of public finances considered in the model are the general government gross debt (Debt), and the general government deficit or surplus (Deficit), both calculated in percentage of the GDP and provided by the AMECO database. Finally we test two additional independent variables: the GDP growth (Growth) and the GDP per capita in purchasing power standards (GGDPpps), as provided by Eurostat.

The model tests the role of the six explanatory variables in influencing the Europe 2020 Index:

Table 5.5 Europe 2020 Index and institutional and economic factors

| Explanatory variables | Dependent variable: Europe 2020 Index | | | | | |
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
GovEffectiveness	.074***	.077***	.071***	.078***	.073***	.079***
	(0.013)	(0.013)	(0.013)	(0.016)	(0.012)	(0.015)
Trust	.566***	.573***	.562***	.564***	.552***	.548***
	(0.060)	(0.061)	(0.059)	(0.060)	(0.060)	(0.060)
Debt		.000			−.001*	−.001*
		(0.000)			(0.000)	(0.000)
Deficit		−.002			.002	.000
		(0.002)			(0.002)	(0.002)
Growth			−.004*		−.005**	−.005**
			(0.002)		(0.002)	(0.002)
GPDpps				.000		.000
				(0.000)		(0.000)
Constant	.208***	.215***	.220***	.212***	.250***	.257***
	(0.015)	(0.019)	(0.016)	(0.018)	(0.022)	(0.024)
Observations	270	270	270	270	270	270
R^2	0.560	0.565	0.571	0.561	0.580	0.581
No. countries	27	27	27	27	27	27

Robust *t*-statistics in brackets. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$. Test (F): Prob > $F = 0.0000$. The main assumptions are verified: linearity of the relationship; independence of the observations; normality of the residuals; homoscedasticity.

We first test the two institutional variables alone, and find a coefficient of determination of 56 per cent, which means the two variables explain more than half of total variation in the index. Both institutional variables, moreover, are strongly significant ($p = 0.000$) and have positive coefficients.

We gradually include the other variables, in order to understand whether they add explanatory power to the model, and find that debt and deficit do not add much, and that they moreover are not significant and have coefficients close to zero. The level of GDP per capita in purchasing power standards has the same null effect on the dependent variable. GDP growth is the only one that shows certain significance, but it is associated with extremely low coefficient, close to zero. It might be considered significant in the regression, but it does not influence the variation of the Europe 2020 Index.

Government effectiveness and trust, on the contrary, maintain their strong significance in all specifications of the model and the estimated effects are quite relevant. An increment of one unit of the government effectiveness indicator, holding constant all the other variables, leads to an increase in the Europe 2020 Index by 0.079 units, while the same increment in the generalized measure of trust leads to an increase in the index by 0.548 units. None of the other variables has a coefficient considerably different from zero in any of the specifications of the model.

Discussion

The attempt to disentangle the main factors affecting the performance of EU Member States in pursuing the goals of the Europe 2020 Strategy points to the importance of institutions. Formal and informal institutions seem to play a decisive role in explaining the different performances of European countries in the Europe 2020 Strategy, more than the other economic variables, based on GDP, which have been tested through the model. Both formal and informal institutions play a prominent role in such a complex development strategy, with social capital being the first and most relevant factor.

These results confirm the "institutional" view, suggesting that the effectiveness of policy making strongly depends on context factors, and that the institutional environment in which it takes place may actually determine a great deal of its chances to succeed.

The results of the analysis give robust support to the hypothesis that good governance is particularly important in such a strategy. As we saw before, many of the policy fields on which the Europe 2020 Strategy focuses fall out of the direct competences of the EU, and this implies that national policy making plays a decisive role in determining the effectiveness of the strategy and the overall European capacity to achieve its goals. This analysis has proved the intuitive idea that much of the variation in performances across countries depends on the quality of governance at the national level.

The role of social capital, then, appears as particularly strong. More cohesive societies are also those that are better equipped to pursue a broad development

strategy. A strategy based on several pillars, whose scope goes well beyond the strict concept of the GDP growth, seems to require a high level of social capital, measured by its component of interpersonal trust.

These results also find support in previous analyses (Easterly 2002; Rodrik 2003; Dixit 2009), which suggested that the quality of institutions becomes more decisive for higher levels of development, which is a particularly interesting suggestion for our case of a developing strategy for a group of developed economies, like the MS of the EU.

The finding that both social capital and good governance are the main determinant factors of success in the Europe 2020 Strategy also confirms the suggestion by some authors (Grootaert and Van Bastelaer 2002: 5) that an "encompassing view of social capital includes the social and political macro environment that shapes social structure and enables norms to develop … this view also includes the macro-level formal institutional relationships and structures."

Others, like Gros and Roth (2012), specifically mentioned the relevance of institutional factors for the Europe 2020 Strategy. They argued that it can be best achieved with appropriate and sufficient investment in human and social capital and with efficient government institutions. They claim that the quality of the institutions is more important than other factors, and that "a sufficient level of government effectiveness throughout the EU-27 is a critical condition for making the EU as a whole more competitive," even arguing that that "a clear implication would be that the structural funds should be used to build social capital and effective institutions rather than airports and highways" (Gros and Roth 2012: 85).

Conclusions

The inherent complexity of the Europe 2020 Strategy, focused on areas where the European Commission does not have full jurisdictional competence, increases the relevance of a timely and precise monitoring system and of an effective and efficient institutional setting. A supranational strategy so dependent on initiatives and actions by national governments requires a strong monitoring mechanism and a high degree of accountability for the Member States. In order to achieve the best possible results, it is important to understand which are the key factors determining countries' performances. This paper makes contributions in both directions.

The Europe 2020 Index represents a powerful tool to monitor the performances of the EU countries towards the achievements of the strategy goals, as defined by the eight official headline indicators. The index allows a yearly monitoring and can already be built for ten consecutive years, since 2003. It can play an important role in enhancing the transparency and accountability of policies implemented at the EU and national level in the current context.

We observe certain differences in performances, both between countries and across time. The need for a better understanding of the determinants of those differences inspired an analysis of potential success factors, such as level of wealth, growth, sustainability of public finances, and institutions.

The analysis looks at the institutional economics literature in search of explanation. The underlying idea is that such a wide, supranational, complex strategy characterized by multilevel governance, by a need for continuous political commitment, and by policy areas falling beyond the strict competences of the European Commission may require something more than the coordination of economic policies. I conjectured that institutions, in the sense of North (1991), could be the key explanatory variable, and decided to test both measures of formal and informal institutions against the economic criteria based on the GDP.

The econometric analysis performed in this paper confirmed the key importance of formal and informal institutions, both in absolute and in relative terms, compared with the other factors considered. Institutional variables are the most significant ones and have the strongest estimated effects. The results do not imply that economic growth, levels of the GDP per capita, and fiscal sustainability are not important objectives *per se*. The main policy implication of this analysis would be that in order for the goals of the Europe 2020 Strategy to be achieved, policy making should adopt a broader focus that includes the role of institutions.

Notes

1 The EU had 27 Member States until 1 July 2013, when Croatia joined, becoming the 28th.
2 When we use the geometric aggregation method, the marginal utility of an increase in the score is much higher for low absolute values of the score; consequently, a country has a greater incentive, compared to the linear method, to address those areas where it performs badly, as this would give it better chances to improve its position in the ranking (OECD 2008).
3 In some cases, where the value of the indicator for one country equals the lower bound in the normalization formula, the value would become zero, and the geometric aggregation method would imply a value of zero for the overall index. This problem has been solved by assigning, in those three cases, the lowest possible score different from zero to the value of the normalized indicator (i.e. 0.001).
4 Accessed 10 July 2014.
5 The Worldwide Governance Indicators report aggregate and individual governance indicators for 215 economies over the period 1996–2012, for six dimensions of governance: (1) voice and accountability; (2) political stability and absence of violence; (3) government effectiveness; (4) regulatory quality; (5) rule of law; (6) control of corruption.
6 Interestingly, the study by Alfonso et al. was performed before the start of the financial crisis and of the consequent sovereign debt problems in the Eurozone.
7 The WVS measures generalized trust through the question developed by Rosenberg (1956): "Generally speaking, would you say that most people can be trusted or that you can be too careful in dealing with people?"
8 Available at info.worldbank.org/governance/wgi.
9 Available at www.worldvaluessurvey.org.

References

Abreu, D. 1988. "On the Theory of Infinitely Repeated Games with Discounting." *Econometrica* 56(2): 383–396.

Acemoglu, D. and J. Robinson. 2010. "The Role of Institutions in Growth and Development." *Review of Economics and Institutions* 1(2) (Fall): 133–164.

Acemoglu D., S. Johnson and J. Robinson. 2001. "The Colonial Origins of Comparative Development: An Empirical Investigation." *American Economic Review* 91(5): 1369–1401.

Acemoglu, D., S. Johnson, J. Robinson and Y. Thaicharoen. 2003. "Institutional Causes, Macroeconomic Symptoms: Volatility, Crises and Growth." *Journal of Monetary Economics* 50(1): 49–123.

Adams-Kane, J. and Lim. 2014. *Institutional Quality Mediates the Effect of Human Capital on Economic Performance*. Policy research working paper 6792. Washington, DC: World Bank.

Afonso, A., P. Gomes and P. Rother. 2007. *What "Hides" Behind Sovereign Debt Ratings?* Working paper no. 711. Frankfurt: ECB.

Alfaro, L., S. Kalemli-Ozcan and V. Volosovych. 2005. *Why Doesn't Capital Flow from Rich to Poor Countries? An Empirical Investigation*. Working paper w11901. Cambridge, MA: National Bureau of Economic Research.

Anderson, J. E. and D. Marcouiller. 2002. "Insecurity and the Pattern of Trade: An Empirical Investigation." *Review of Economics and Statistics* 84: 342–352.

Arrow, K. 1972. "Gifts and Exchanges." *Philosophy and Public Affairs*,(1): 343–362.

Azfar, O. and T. Gurgur. 2005. "Government Effectiveness, Crime Rates and Crime Reporting." *Crime Rates and Crime Reporting* (May): 2–42.

Beugelsdijk, S., H. L. De Groot and A. B. Van Schaik. 2004. "Trust and Economic Growth: A Robustness Analysis." *Oxford Economic Papers* 56(1): 118–134.

Bjørnskov, C. 2003. "The Happy Few: Cross-country Evidence on Social Capital and Life Satisfaction." *Kyklos* 56(1): 3–16.

Blume, L., and S. Voigt. 2013. "The Economic Effects of Constitutional Budget Institutions." *European Journal of Political Economy* 29(C): 236–251.

Bourdieu, P. 1986. "Forms of Capital." In *Handbook of Theory and Research for the Sociology of Education*, edited by John G. Richardson, pp. 241–260. Westport, CT: Greenwood Press.

Brüderl, J. and P. Preisendörfer. 1998. "Network Support and the Success of Newly Founded Businesses." *Small Business Economics* 10: 213–225.

Buiter, W. H., G. Corsetti and N. Roubini. 1993. "Excessive Deficits: Sense and Nonsense in the Treaty of Maastricht." *Economic Policy* 1: 57–100.

Chang, H. J. 2011. "Institutions and Economic Development: Theory, Policy and History." *Journal of Institutional Economics* 7(4): 473.

Clarke, G. R. 2001. "How Institutional Quality and Economic Factors Impact Technological Deepening in Developing Countries." *Journal of International Development* 13(8): 1097–1118.

Coase, R. H. 1937. "The Nature of the Firm." *Economica* 4(16): 386–405.

Coase, R. H. 1984. "The New Institutional Economics." *Journal of Institutional and Theoretical Economics* 140(1): 229–231.

Coase, R. H. 1998. "The New Institutional Economics." *The American Economic Review* 88(2): 72–74.

Cole, H. L., G. J. Mailath and A. Postlewaite. 1992. "Social Norms, Savings Behavior, and Growth." *Journal of Political Economy* 100(6): 1092–1125.

Coleman, J. S. 1988. "Social Capital in the Creation of Human Capital." *American Journal of Sociology* (94): S95–S120.

Commons, J. R. 1931. "Institutional Economics." *American Economic Review* 21: 648–657.

Dakhli, M. and D. de Clercq. 2004. "Human Capital, Social Capital, and Innovation: A Multi-Country Study." *Entrepreneurship and Regional Development* 16: 107–128.

Delors, J. 2013. "Economic Governance in the European Union: Past, Present and Future." *Journal of Common Market Studies* 51(2): 169–178.

DGINS ESSC. 2010. "Sofia Memorandum: Measuring Progress, Well-being and Sustainable Development." Available at www.dgins-sofia2010.eu.

Dixit, A. 2009. "Governance, Institutions and Economic Activity." *American Economic Review* 99(1): 3–24.

Djankov, S., R. LaPorta, F. Lopez-de-Silanes and A. Shleifer. 2002. "The Regulation of Entry." *Quarterly Journal of Economics* 117(1): 1–37.

Dollar, D. and A. Kraay. 2003. "Institutions, Trade and Growth." *Journal of Monetary Economics* 50(1): 133–162.

Dornbusch, R. 1996. *Debt and Monetary Policy: The Policy Issues*. Working paper w5573. Cambridge, MA: National Bureau of Economic Research.Dornbusch, R. 1997. "Fiscal Aspects of Monetary Integration." *American Economic Review* 87(2): 221–223.

Easterly, W. 2002. "The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics." *Journal of Macromarketing* 22(1): 136–144.

Ebert, U. and H. Welsch. 2004. "Meaningful Environmental Indices: A Social Choice Approach." *Journal of Environmental Economics and Management* 47: 270–283.

Erixon, F. 2010. "The Europe 2020 Strategy: Time for Europe to Think Again." *European View* 9(1): 29–37.

European Commission Communication. 2010. "EUROPE 2020: A Strategy for Smart, Sustainable and Inclusive Growth." *COM* (March): 1–35.

Fukuyama, F. 1995. *Trust: The Social Virtues and the Creation of Prosperity*. New York: Free Press.

Glaeser, E. L., D. Laibson and B. Sacerdote. 2002. "An Economic Approach to Social Capital." *The Economic Journal* 112(483): F437–F458.

Glaeser, E. L., R. La Porta, F. Lopez-de-Silanes and A. Shleifer. 2004. "Do Institutions Cause Growth?" *Journal of Economic Growth* 9(3): 271–303.

Greenspan, A. 2007. *The Age of Turbulence.* New York: Penguin Books.

Greif, A. 1993. "Contract Enforceability and Economic Institutions in Early Trade: The Maghribi Traders' Coalition." *American Economic Review* 83(3): 525–548.

Grootaert, C. and T. Van Bastelaer. 2002. *Understanding Social Capital.* Washington DC: The World Bank.

Gros, D. and F. Roth. 2012. *The Europe 2020 Strategy: Can it Maintain the EU's Competitiveness in the World?* No. 7260. Brussels: Centre for European Policy Studies.

Hall, R. E. and C. I. Jones. 1999. "Why do Some Countries Produce So Much More Output Per Worker than Others?" *The Quarterly Journal of Economics* 114(1):83–116.

Helliwell, J. F., C. P. Barrington-Leigh, A. Harris and H. Huang. 2009. *International Evidence on the Social Context of Well-Being*. Working paper w14720. Cambridge, MA: National Bureau of Economic Research. Hodgson, G. M. 1998. "The Approach of Institutional Economics." *Journal of Economic Literature* 36(1): 166–192.

Hooghe, L. and G. Marks. 2010. "Types of Multi-Level Governance." *Handbook on Multi-Level Governance*. pp. 17–31.

Inglehart, R. 1999. "Trust, Well-Being and Democracy." In *Democracy and Trust*, edited by M. Warren, pp. 88–120. Cambridge: Cambridge University Press.

Jachtenfuchs, M. 2010. "The Institutional Framework of the European Union." *Handbook on Multi-Level Governance.* pp. 203–223.

Karlan, D. S. 2005. "Using Experimental Economics to Measure Social Capital and Predict Financial Decisions." *American Economic Review* 95(5): 1688–1699.

Kaufmann, D., A. Kraay and M. Mastruzzi. 2010. *The Worldwide Governance Indicators: Methodology and Analytical Issues*. Policy research working paper no. 5430. Washington, DC: World Bank.

Knack, S. and P. Keefer. 1997. "Does Social Capital have an Economic Payoff? A Cross-Country Investigation." *The Quarterly Journal of Economics* 112(4):1251–1288.

Kreps, D. M., J. Roberts and R. Wilson. 1982. "Rational Cooperation in the Finitely Repeated Prisoner's Dilemma." *Journal of Economic Theory* 27: 245–52.

Kurtz, M. J. and A. Schrank. 2007. "Growth and Governance: Models, Measures, and Mechanisms." *Journal of Politics* 69: 538–554.

Kyriacou, A. P. and O. Roca-Sagalés. 2011. "Fiscal Decentralization and Government Quality in the OECD." *Economics Letters* 111(3): 191–193.

Lambsdorff, J. G. 2003. "How Corruption Affects Persistent Capital Flows." *Economics of Governance* 4(3): 229–243.

La Porta, R., F. Lopez-de-Silane, A. Shleifer and R. W. Vishny. 1997. "Legal Determinants of External Finance." *Journal of Finance* 52(3): 1131–1150.

Lee, S. Y. and A. B. Whitford. 2009. "Government Effectiveness in Comparative Perspective." *Journal of Comparative Policy Analysis* 11(2): 249–281.

Levchenko, A. A. 2004. *Institutional Quality and International Trade*. Washington, DC: IMF.

Magalhães, P. C. 2014. "Government Effectiveness and Support for Democracy. *European Journal of Political Research* 53(1): 77–97.

Martens, W. 2010. "Europe 2020 and Beyond." *European View* 9(1): 29–37.

Mauro, P. 1995. "Corruption and Growth." *Quarterly Journal of Economics* 110(3): 681–712.

North, D. C. 1991. "Institutions." *Journal of Economic Perspectives* 5(1): 97–112.

North, D. C. 1993. *The New Institutional Economics and Development*. EconWPA Economic History (9309002). Available at www2.econ.iastate.edu/tesfatsi/NewInstE.North.pdf.

OECD. 2001. *The Well-Being of Nations: The Role of Human and Social Capital*. Paris: OECD Publishing.

OECD. 2008. *Handbook on Constructing Composite Indicators: Methodology and User Guide*. Paris: OECD Publishing.

Olson, M. 1982. *The Rise and Decline of Nations*. New Haven, CT: Yale University Press.

Ostrom, E. 1999. "Social Capital: A Fad or a Fundamental Concept?" In *Social Capital: A Multifaceted Perspective*, edited by P. Dasgupta and I. Serageldin. Washington, DC: The World Bank, pp. 195–198.

Papadopoulos, Y. 2010. "Accountability and Multi-Level Governance: More Accountability, Less Democracy?" *West European Politics* 33(5): 1030–1049.

Parada, J. J. 2001. "Original Institutional Economics: A Theory for the 21st Century?" *Oeconomicus* 5 (Fall): 46–60.

Pasimeni, P. 2011. "The Europe 2020 Index." *Social Indicators Research* 110(2): 613–635.

Pasimeni, P. 2012. "Measuring Europe 2020: A New Tool to Assess the Strategy." *International Journal of Innovation and Regional Development* 4(5): 365–385.

Pugno, M. and P. Verme. 2012. *Life Satisfaction, Social Capital and the Bonding-Bridging Nexus*. Working paper 5945. Washington, DC: World Bank.

Putnam, R. D. 1993. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, NJ: Princeton University Press.

Putnam, R. D. 2000. *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon & Schuster.

Rodrik, D. (ed.). 2003. *In Search of Prosperity: Analytic Narratives on Economic Growth*. Princeton, NJ: Princeton University Press.

Rodrik, D. 2008. *One Economics, Many Recipes: Globalization, Institutions, and Economic Growth*. Princeton, NJ: Princeton University Press.

Rodrik, D., A. Subramanian and F. Trebbi. 2004. "Institutions Rule: The Primacy of Institutions Over Geography and Integration in Economic Development." *Journal of Economic Growth* 9(2): 131–165.

Rose, R. 2000. "How Much Does Social Capital Add to Individual Health? A Survey Study of Russians." *Social Science and Medicine* 51: 1421–1435.

Rosenberg, M. 1956. "Misanthropy and Political Ideology." *American Sociological Review* 21(6): 690–695.

Sabatini, F. 2008. "Social Capital and the Quality of Economic Development." *Kyklos* 61(3): 466-499.

Sabatini, F. 2009. "Social Capital as Social Networks: A New Framework for Measurement and an Empirical Analysis of its Determinants and Consequences." *The Journal of Socio-Economics* 38(3): 429–442.

Sachs, J. D. and A. M. Warner. 1997. "Fundamental Sources of Long-Run Growth." *American Economic Review* 87(2): 184–188.

Sarcinelli, M. 2010. "'Europa 2020', Nuovo Governo Economico e Ri-Regolamentazione Finanziaria: Incentivi o Vincoli Alla Crescita?" *Moneta e Credito* 63(252): 285–319.

Serageldin, I. and C. Grootaert. 2000. "Defining Social Capital: An Integrated View." In *Social Capital: A Multifaceted Perspective*, edited by P. Dasgupta and I. Serageldin, pp. 40–58. Washington, DC: World Bank.

Sobel, J. 2002. "Can We Trust Social Capital?" *Journal of Economic Literature* 40: 139–154.

Toya, H. and M. Skidmore. 2012. *Do Natural Disasters Enhance Societal Trust?* Working paper no. 3905. Munich: CESifo.

Uslaner, E. M. 2003. "Trust, Democracy and Governance: Can Government Policies Influence Generalized Trust?" In *Generating Social Capital: Civil Society and Institutions in Comparative Perspective*, edited by M. Hooghe and D. Stolle, pp. 171–190. New York: Palgrave Macmillan:.

Veblen, T. 1898. "Why is Economics Not an Evolutionary Science?" *The Quarterly Journal of Economics* 12(4): 373–397.

Williamson, O. E. 1975. *Markets and Hierarchies*. New York: Macmillan.

Williamson, O. E. 2000. "The New Institutional Economics: Taking Stock, Looking Ahead." *Journal of Economic Literature* 38(3): 595–613.

Wilson, W. J. 1987. *The Truly Disadvantaged*. Chicago, IL: University of Chicago Press.

Woolcock, M. 1998. "Social Capital and Economic Development: Toward a Theoretical Synthesis and Policy Framework." *Theory and Society* 27(2): 151–208.

Zak, P. and S. Knack. 2001. "Trust and Growth." *Economic Journal* 111: 295–331.

Annex 1: Indicators used in the Europe 2020 Index

Tertiary education attainment (TEDU)

The share of the population aged 30–34 years who have successfully completed university or university-like (tertiary-level) education with an education level ISCED 1997 (International Standard Classification of Education) of 5–6. This indicator measures the Europe 2020 strategy's headline target to increase the share of the 30–34-year-olds having completed tertiary or equivalent education to at least 40 per cent in 2020. Data source: Eurostat.

Gross domestic expenditure on R&D (GERD)

The indicator provided is GERD (gross domestic expenditure on R&D) as a percentage of GDP. "Research and experimental development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of this stock of knowledge to devise new applications" (Frascati Manual, 2002 edition, §63). R&D is an activity where there are significant transfers of resources between units, organizations and sectors and it is important to trace the flow of R&D funds Data source: Eurostat.

Greenhouse gas emissions (GGE)

This indicator shows trends in total man-made emissions of the "Kyoto basket" of greenhouse gases presenting annual total emissions in relation to 1990 emissions. The "Kyoto basket" of greenhouse gases includes carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and the so-called F-gases (hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride, SF_6). These gases are aggregated into a single unit using gas-specific global warming potential (GWP) factors. The aggregated greenhouse gas emissions are expressed in units of CO_2 equivalents. The indicator does not include emissions and removals related to land use, land-use change and forestry (LULUCF); nor does it include emissions from international aviation and international maritime transport. CO_2 emissions from biomass with energy recovery are reported as a Memorandum item according to UNFCCC Guidelines and not included in national greenhouse gas totals. The EU as a whole is committed to achieving at least a 20 per cent reduction of its greenhouse gas emissions by 2020 compared with 1990. This objective implies: a 21 per cent reduction in emissions from sectors covered by the EU ETS (emission trading scheme) compared to 2005 by 2020; a reduction of 10 per cent in emissions for sectors outside the EU ETS. To achieve this 10 per cent overall target each Member State has agreed to country-specific limits for 2020 compared to 2005 (Council Decision 2009/406/EC). Data Source: European Environment Agency.

Share of renewable energy in gross final energy consumption (RNEW)

This indicator is calculated on the basis of energy statistics covered by the Energy Statistics Regulation. It may be considered an estimate of the indicator described in Directive 2009/28/EC, as the statistical system for some renewable energy technologies is not yet fully developed to meet the requirements of this Directive. However, the contribution of these technologies is rather marginal for the time being. More information about the renewable energy shares calculation methodology and Eurostat's annual energy statistics can be found in the Renewable Energy Directive 2009/28/EC, the Energy Statistics Regulation 1099/2008, and in the transparency platform of the Directorate General for Energy (http://ec.europa.eu/energy/renewables/index_en.htm). Data source: Eurostat.

Energy intensity of the economy (EINT)

This indicator is the ratio between the gross inland consumption of energy and the gross domestic product (GDP) for a given calendar year. It measures the energy consumption of an economy and its overall energy efficiency. The gross inland consumption of energy is calculated as the sum of the gross inland consumption of five energy types: coal, electricity, oil, natural gas, and renewable energy sources. The GDP figures are taken at chain-linked volumes with reference year 2000. The energy intensity ratio is determined by dividing the gross inland consumption by the GDP. Since gross inland consumption is measured in kgoe (kilogram of oil equivalent) and GDP in thousands of euros, this ratio is measured in kgoe per thousand euros. Data source: Eurostat.

Employment rate of the population aged 20–64 (EMPL)

The employment rate is calculated by dividing the number of persons aged 20–64 in employment by the total population of the same age group. The indicator is based on the EU Labour Force Survey. The survey covers the entire population living in private households and excludes those in collective households such as boarding houses, halls of residence and hospitals. Employed population consists of those persons who, during the reference week, did any work for pay or profit for at least one hour, or were not working but had jobs from which they were temporarily absent. Data source: Eurostat.

Early leavers from education (SCHO)

Percentage of the population aged 18–24 with at most lower-secondary education and not in further education or training. From 20 November 2009, this indicator is based on annual averages of quarterly data instead of one unique reference quarter in spring. "Early leavers from education and training" refers to persons aged 18–24 who fulfil the following two conditions: first, the highest level of education

or training attained is ISCED 0, 1, 2 or 3c short; second, respondents declared not having received any education or training in the four weeks preceding the survey (numerator). The denominator consists of the total population of the same age group, excluding no answers to the questions "highest level of education or training attained" and "participation to education and training." Data source: both the numerators and the denominators come from the EU Labour Force Survey.

Population at-risk-of-poverty or exclusion (POV)

The Europe 2020 strategy promotes social inclusion, in particular through the reduction of poverty, by aiming to lift at least 20 million people out of the risk of poverty and exclusion. This indicator summarizes the number of people who are either at risk-of-poverty and/or materially deprived and/or living in households with very low work intensity. Interactions between the indicators are excluded. At risk-of-poverty are persons with an equivalized disposable income below the risk-of-poverty threshold, which is set at 60 per cent of the national median equivalized disposable income (after social transfers). The collection "material deprivation" covers indicators relating to economic strain, durables, housing, and environment of the dwelling. Severely materially deprived persons have living conditions severely constrained by a lack of resources and have experienced at least four out of the nine following deprivations items: cannot afford (i) to pay rent or utility bills, (ii) keep home adequately warm, (iii) face unexpected expenses, (iv) eat meat, fish, or a protein equivalent every second day, (v) a week holiday away from home, (vi) a car, (vii) a washing machine, (viii) a colour TV, or (ix) a telephone. People living in households with very low work intensity are people aged 0–59 living in households where the adults worked less than 20 per cent of their total work potential during the past year. Data source: Eurostat.